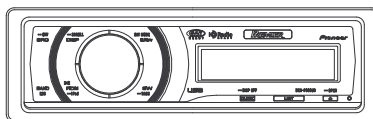


Service Manual



DEH-P600UB/XN/UC

ORDER NO.
CRT4090

CD RECEIVER

DEH-P600UB_{/XN/UC}

DEH-P6000UB_{/XN/UC}

DEH-P6050UB_{/XN/ES}

DEH-P6050UB_{/XN/ES1}

This service manual should be used together with the following manual(s):

Model No.	Order No.	Mech.Module	Remarks
CX-3240	CRT4050	S10.5COMP2- iPod/USB	CD Mech. Module : Circuit Descriptions, Mech. Descriptions, Disassembly



For details, refer to "Important Check Points for Good Servicing".

SAFETY INFORMATION

CAUTION

This service manual is intended for qualified service technicians; it is not meant for the casual do-it-yourselfer. Qualified technicians have the necessary test equipment and tools, and have been trained to properly and safely repair complex products such as those covered by this manual. Improperly performed repairs can adversely affect the safety and reliability of the product and may void the warranty. If you are not qualified to perform the repair of this product properly and safely, you should not risk trying to do so and refer the repair to a qualified service technician.

WARNING

This product contains lead in solder and certain electrical parts contain chemicals which are known to the state of California to cause cancer, birth defects or other reproductive harm.
Health & Safety Code Section 25249.6 - Proposition 65

● Safety Precautions for those who Service this Unit.

- When checking or adjusting the emitting power of the laser diode exercise caution in order to get safe, reliable results.

Caution:

1. During repair or tests, minimum distance of 13 cm from the focus lens must be kept.
2. During repair or tests, do not view laser beam for 10 seconds or longer.

CAUTION

Danger of explosion if battery is incorrectly replaced.
Replaced only with the same or equivalent type recommended by the manufacture.
Discard used batteries according to the manufacture's instructions.

[Important Check Points for Good Servicing]

In this manual, procedures that must be performed during repairs are marked with the below symbol. Please be sure to confirm and follow these procedures.

1. Product safety



Please conform to product regulations (such as safety and radiation regulations), and maintain a safe servicing environment by following the safety instructions described in this manual.

- ① Use specified parts for repair.

Use genuine parts. Be sure to use important parts for safety.

- ② Do not perform modifications without proper instructions.

Please follow the specified safety methods when modification (addition/change of parts) is required due to interferences such as radio/TV interference and foreign noise.

- ③ Make sure the soldering of repaired locations is properly performed.

When you solder while repairing, please be sure that there are no cold solder and other debris. Soldering should be finished with the proper quantity. (Refer to the example)

- ④ Make sure the screws are tightly fastened.

Please be sure that all screws are fastened, and that there are no loose screws.

- ⑤ Make sure each connectors are correctly inserted.

Please be sure that all connectors are inserted, and that there are no imperfect insertion.

- ⑥ Make sure the wiring cables are set to their original state.

Please replace the wiring and cables to the original state after repairs. In addition, be sure that there are no pinched wires, etc.

- ⑦ Make sure screws and soldering scraps do not remain inside the product.

Please check that neither solder debris nor screws remain inside the product.

- ⑧ There should be no semi-broken wires, scratches, melting, etc. on the coating of the power cord.

Damaged power cords may lead to fire accidents, so please be sure that there are no damages. If you find a damaged power cord, please exchange it with a suitable one.

- ⑨ There should be no spark traces or similar marks on the power plug.

When spark traces or similar marks are found on the power supply plug, please check the connection and advise on secure connections and suitable usage. Please exchange the power cord if necessary.

- ⑩ Safe environment should be secured during servicing.

When you perform repairs, please pay attention to static electricity, furniture, household articles, etc. in order to prevent injuries. Please pay attention to your surroundings and repair safely.

2. Adjustments



To keep the original performance of the products, optimum adjustments and confirmation of characteristics within specification. Adjustments should be performed in accordance with the procedures/instructions described in this manual.

3. Lubricants, Glues, and Replacement parts



Use grease and adhesives that are equal to the specified substance. Make sure the proper amount is applied.

4. Cleaning



For parts that require cleaning, such as optical pickups, tape deck heads, lenses and mirrors used in projection monitors, proper cleaning should be performed to restore their performances.

5. Shipping mode and Shipping screws



To protect products from damages or failures during transit, the shipping mode should be set or the shipping screws should be installed before shipment. Please be sure to follow this method especially if it is specified in this manual.

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1. SERVICE PRECAUTIONS

1.1 SERVICE PRECAUTIONS



1. You should conform to the regulations governing the product (safety, radio and noise, and other regulations), and should keep the safety during servicing by following the safety instructions described in this manual.
2. Before disassembling the unit, be sure to turn off the power. Unplugging and plugging the connectors during power-on mode may damage the ICs inside the unit.
3. To protect the pickup unit from electrostatic discharge during servicing, take an appropriate treatment (shorting-solder) by referring to "the DISASSEMBLY".
4. After replacing the pickup unit, be sure to check the grating.
5. Be careful in handling ICs. Some ICs such as MOS type are so fragile that they can be damaged by electrostatic induction.
6. EJECT LOCK MODE for CD mechanism
In order to enter "EJECT LOCK" mode, reset start while pressing the "DISP" and "BAND/ESC" keys together. Pressing the "DISP" and "BAND/ESC" keys until monitor backlight is turned on.
In order to exit "EJECT LOCK" mode, follow the same steps to enter this mode.

1.2 NOTES ON SOLDERING

- For environmental protection, lead-free solder is used on the printed circuit boards mounted in this unit.
Be sure to use lead-free solder and a soldering iron that can meet specifications for use with lead-free solders for repairs accompanied by reworking of soldering.
- Compared with conventional eutectic solders, lead-free solders have higher melting points, by approximately 40° C.
Therefore, for lead-free soldering, the tip temperature of a soldering iron must be set to around 373° C in general, although the temperature depends on the heat capacity of the PC board on which reworking is required and the weight of the tip of the soldering iron.

Compared with eutectic solders, lead-free solders have higher bond strengths but slower wetting times and higher melting temperatures (hard to melt/easy to harden).

The following lead-free solders are available as service parts:

- Parts numbers of lead-free solder:
GYP1006 1.0 in dia.
GYP1007 0.6 in dia.
GYP1008 0.3 in dia.

2. SPECIFICATIONS

2.1 SPECIFICATIONS

● DEH-P600UB/XN/UC, DEH-P6000UB/XN/UC

General

Power source..... 14.4 V DC
(10.8 V to 15.1 V allowable)
Grounding system..... Negative type
Max. current consumption
..... 10.0 A
Backup current 6.0 mA or less

Dimensions (W × H × D):

DIN

Chassis 178 mm × 50 mm × 165 mm
(7 in. × 2 in. × 6-1/2 in.)
Nose 188 mm × 58 mm × 18 mm
(7-3/8 in. × 2-1/4 in. × 3/4 in.)

D

Chassis 178 mm × 50 mm × 165 mm
(7 in. × 2 in. × 6-1/2 in.)
Nose 170 mm × 45 mm × 18 mm
(6-3/4 in. × 1-3/4 in. × 3/4 in.)

Weight 1.5 kg (3.3 lbs)

Audio

Maximum power output 50 W × 4
50 W × 2/4 Ω + 70 W × 1/2
Ω (for subwoofer)

Continuous power output .. 22 W × 4 (50 Hz to 15 000
Hz, 5 % THD, 4 Ω load, both
channels driven)

Load impedance 4 Ω to 8 Ω × 4
4 Ω to 8 Ω × 2 + 2 Ω × 1

Preout max output level 4 V

Equalizer (7-Band Graphic Equalizer):

Frequency..... 50/125/315/800/2k/5k/12.5k
Hz

Gain ±12 dB

HPF:

Frequency..... 50/63/80/100/125 Hz

Slope -12 dB/oct

Subwoofer (mono):

Frequency..... 50/63/80/100/125 Hz

Slope -18 dB/oct

Gain +6 dB to -24 dB

Phase Normal/Reverse

Bass boost:

Gain +12 dB to 0 dB

CD player

System Compact disc audio system

Usable discs Compact disc

Signal-to-noise ratio..... 94 dB (1 kHz) (IHF-A net-
work)

Number of channels 2 (stereo)

MP3 decoding format MPEG-1 & 2 Audio Layer 3
WMA decoding format Ver. 7, 7.1, 8, 9, 10, 11 (2ch
audio)

AAC decoding format MPEG-4 AAC (iTunes®
encoded only) (.m4a)
(Ver. 7.2 and earlier)

WAV signal format Linear PCM & MS ADPCM
(Non-compressed)

USB

Specification USB 2.0 full speed

Supply current 500 mA

Maximum amount of memory
..... 250 GB

File system..... FAT16, FAT32

MP3 decoding format MPEG-1 & 2 Audio Layer 3

WMA decoding format Ver. 7, 7.1, 8, 9, 10, 11 (2ch
audio)
(Windows Media Player)

AAC decoding format MPEG-4 AAC (iTunes®
encoded only) (.m4a)
(Ver. 7.2 and earlier)

WAV signal format Linear PCM & MS ADPCM
(Non-compressed)

FM tuner

Frequency range..... 87.9 MHz to 107.9 MHz

Usable sensitivity..... 8 dBf (0.7 μV / 75 Ω, mono,
S/N: 30 dB)

Signal-to-noise ratio..... 75 dB (IHF-A network)

AM tuner

Frequency range..... 530 kHz to 1 710 kHz
(10 kHz)

Usable sensitivity..... 18 μV (S/N: 20 dB)

Signal-to-noise ratio..... 65 dB (IHF-A network)

CEA2006 Specifications



Power output 14 W RMS × 4 Channels
(4 Ω and ≤ 1 % THD+N)

S/N ratio 91 dBA (reference: 1 W into
4 Ω)



Note

Specifications and the design are subject to mod-
ifications without notice due to improvements. ■

● DEH-P6050UB/XN/ES, /ES1

General

Power source.....	14.4 V DC (12.0 V to 14.4 V allowable)
Grounding system.....	Negative type
Max. current consumption	10.0 A
Backup current	6.0 mA or less
Dimensions (W × H × D):	
DIN	
Chassis.....	178 mm × 50 mm × 165 mm
Nose.....	188 mm × 58 mm × 18 mm
D	
Chassis.....	178 mm × 50 mm × 165 mm
Nose.....	170 mm × 45 mm × 18 mm
Weight	1.5 kg

Audio

Maximum power output.....	50 W × 4 50 W × 2/4 Ω + 70 W × 1/2 Ω (for subwoofer)
Continuous power output ..	22 W × 4 (50 Hz to 15 000 Hz, 5% THD, 4 Ω load, both channels driven)
Load impedance.....	4 Ω to 8 Ω × 4 4 Ω to 8 Ω × 2 + 2 Ω × 1
Preout max output level	4 V
Equalizer (7-Band Graphic Equalizer):	
Frequency.....	50/125/315/800/2k/5k/12.5k Hz
Gain	±12 dB
HPF:	
Frequency.....	50/63/80/100/125 Hz
Slope	-12 dB / oct
Subwoofer (mono):	
Frequency.....	50/63/80/100/125 Hz
Slope	-18 dB / oct
Gain	-24 dB + 6 dB to
Phase	Normal/Reverse
Bass boost:	
Gain	+12 dB to 0 dB

CD player

System.....	Compact disc audio system
Usable discs	Compact disc
Signal-to-noise ratio.....	94 dB (1 kHz) (IEC-A network)
Number of channels	2 (stereo)
MP3 decoding format	MPEG-1 & 2 Audio Layer 3
WMA decoding format	Ver. 7, 7.1, 8, 9, 10, 11 (2ch audio) (Windows Media Player)

AAC decoding format.....	MPEG-4 AAC (iTunes® encoded only) (.m4a) (Ver. 7.2 and earlier)
WAV signal format	Linear PCM & MS ADPCM (Non-compressed)

USB

Specification	USB 2.0 full speed
Supply current	500 mA
Maximum amount of memory	250 GB
File system.....	FAT16, FAT32
MP3 decoding format	MPEG-1 & 2 Audio Layer 3
WMA decoding format	Ver. 7, 7.1, 8, 9, 10, 11 (2ch audio) (Windows Media Player)
AAC decoding format.....	MPEG-4 AAC (iTunes® encoded only) (.m4a) (Ver. 7.2 and earlier)
WAV signal format	Linear PCM & MS ADPCM (Non-compressed)

FM tuner

Frequency range.....	87.5 MHz to 108.0 MHz
Usable sensitivity.....	8 dBf (0.7 μV/75 Ω, mono, S/N: 30 dB)
Signal-to-noise ratio.....	75 dB (IEC-A network)

AM tuner

Frequency range.....	531 kHz to 1 602 kHz (9 kHz) 530 kHz to 1 640 kHz (10 kHz)
Usable sensitivity.....	18 μV (S/N: 20 dB)
Signal-to-noise ratio.....	65 dB (IEC-A network)

Infrared remote control

Wavelength.....	940 nm ± 50 nm
Output	typ; 12 mw/sr per Infrared LED



Note

Specifications and the design are subject to modifications without notice due to improvements. ■

2.2 DISC/CONTENT FORMAT

A



B

C

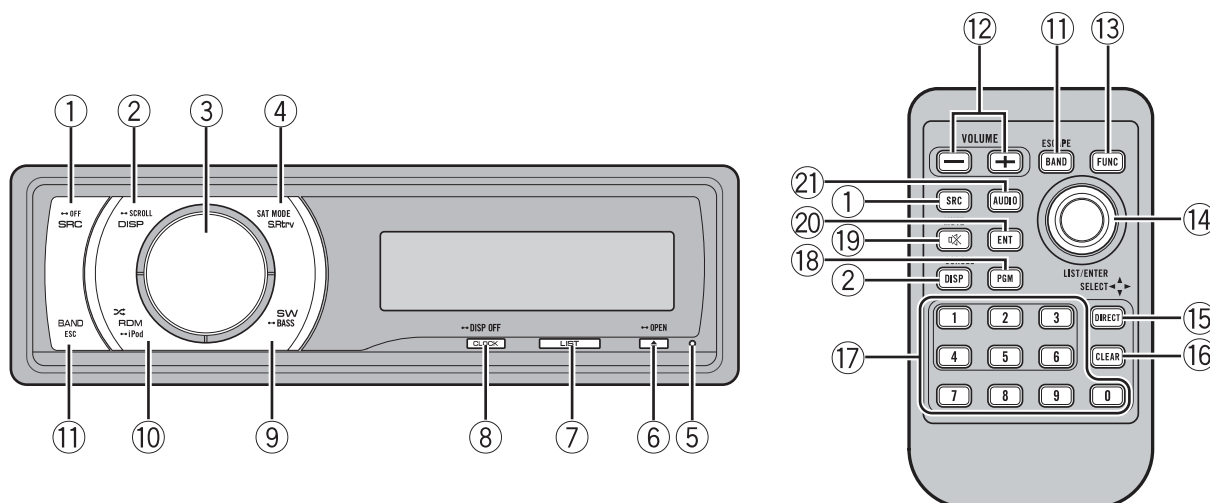
D

E

F

2.3 PANEL FACILITIES

● DEH-P600UB/XN/UC, DEH-P6000UB/XN/UC



What 's What

Head unit

① SRC/OFF button

This unit is turned on by selecting a source. Press to cycle through all the available sources.

② DISP/SCROLL button

Press to select different displays. Press and hold to scroll the text information.

③ MULTI-CONTROL

Move to perform manual seek tuning, fast forward, reverse and track search controls. Also used for controlling functions. Turn to increase or decrease the volume.

④ S.Rtrv/SAT MODE button

Press to switch Sound Retriever settings. When XM tuner or SIRIUS tuner is selected as the source, press to change the channel select mode. When SIRIUS tuner is selected as the source, press and hold to perform the Instant Replay mode.

⑤ RESET button

Press to reset the microprocessor.

⑥ EJECT/OPEN button

Press to eject a CD from your built-in CD player.

Press and hold to open or close the front panel.

⑦ LIST button

Press to display the disc title list, track title list, folder list, file list or preset channel list depending on the source.

⑧ CLOCK/DISP OFF button

Press to change to the clock display. Press and hold to turn the display indication and button illumination off or on.

⑨ SW/BASS button

Press to switch to subwoofer setting menu. When operating subwoofer menu, press to switch setting. Press and hold to switch to bass boost menu.

⑩ RDM/iPod button

Press to turn random function on or off while using CD or USB.

While using iPod, press this button to shuffle all tracks.

Press and hold to switch the control mode while using an iPod connected USB connector of this unit.

If using the iPod with an interface adapter (CD-IB100N), press to switch the shuffle function.

⑪ BAND/ESC button

Press to select among three FM bands and one AM band.

Press to return to the ordinary display when operating menu.

⑱ PGM button

Press to operate the preprogrammed functions for each source.


⑲ MUTE button

Press to turn off the sound. To turn on the sound, press again.

⑳ ENT button

Press to change to the entertainment display.

㉑ AUDIO button

Press to select various sound quality controls. 

Remote control

Operation is the same as when using the buttons on the head unit.

⑫ VOLUME buttons

Press to increase or decrease the volume.

⑬ FUNCTION button

Press to select functions.

⑭ Thumb pad

Move to perform manual seek tuning, fast forward, reverse and track search controls. Also used for controlling functions.

Functions are the same as

MULTI-CONTROL except for volume control.

Press to display the disc title list, track title list, folder list, file list or preset channel list depending on the source.

⑮ DIRECT button

Press to directly select the desired track.

⑯ CLEAR button

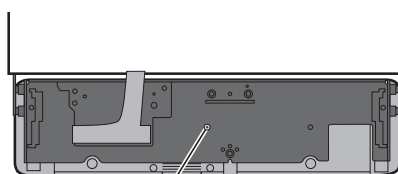
Press to cancel the input number when 0 to 9 are used.

⑰ 0 to 9 buttons

Press to directly select the desired track, preset tuning or disc. Buttons 1 to 6 can operate the preset tuning for the tuner or disc number search for the multi-CD player.

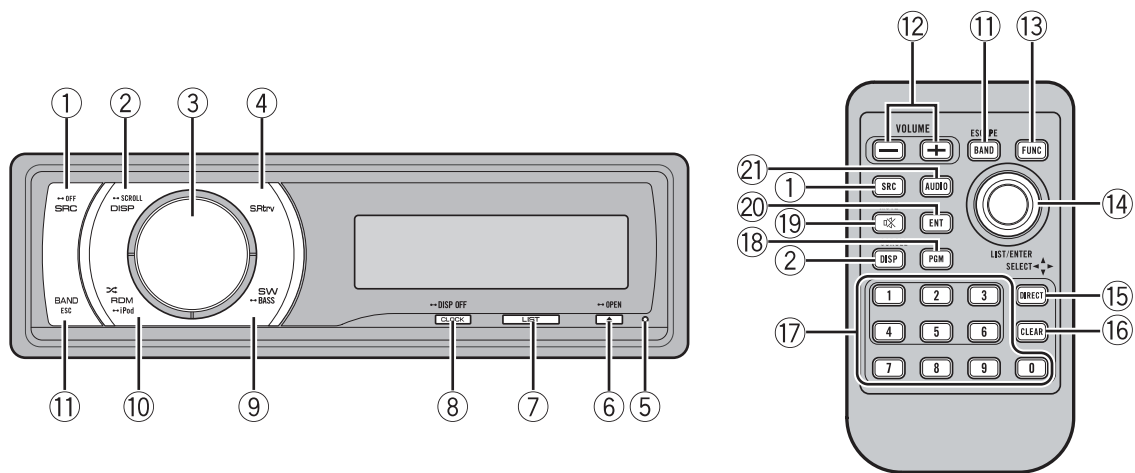
Fastening the front panel

If you do not plan to detach the front panel, the front panel can be fastened with supplied screw.



Service screw
JPZ20P060FTB

● DEH-P6050UB/XN/ES, /ES1



What's What

Head unit

① SRC/OFF button

This unit is turned on by selecting a source. Press to cycle through all the available sources.

② DISP/SCROLL button

Press to select different displays. Press and hold to scroll the text information.

③ MULTI-CONTROL

Move to perform manual seek tuning, fast forward, reverse and track search controls. Also used for controlling functions. Turn to increase or decrease the volume.

④ S.Rtrv button

Press to switch Sound Retriever settings.

⑤ RESET button

Press to reset the microprocessor.

⑥ EJECT/OPEN button

Press to eject a CD from your built-in CD player. Press and hold to open or close the front panel.

⑦ LIST button

Press to display the disc title list, track title list, folder list, file list or preset channel list depending on the source.

⑧ CLOCK/DISP OFF button

Press to change to the clock display. Press and hold to turn the display indication and button illumination off or on.

⑨ SW/BASS button

Press to switch to subwoofer setting menu. When operating subwoofer menu, press to switch setting. Press and hold to switch to bass boost menu.

⑩ RDM/iPod button

Press to turn random function on or off while using CD or USB. While using iPod, press this button to shuffle all tracks. Press and hold to switch the control mode while using an iPod connected USB connector of this unit. If using the iPod with an interface adapter (CD-IB100N), press to switch the shuffle function.

⑪ BAND/ESC button

Press to select among three FM bands and one AM band. Press to return to the ordinary display when operating menu.

Remote control

Operation is the same as when using the buttons on the head unit.

A

⑫ VOLUME buttons

Press to increase or decrease the volume.

⑬ FUNCTION button

Press to select functions.

B

⑭ Thumb pad

Move to perform manual seek tuning, fast forward, reverse and track search controls. Also used for controlling functions.

Functions are the same as

MULTI-CONTROL except for volume control.

Press to display the disc title list, track title list, folder list, file list or preset channel list depending on the source.

C

⑮ DIRECT button

Press to directly select the desired track.

⑯ CLEAR button

Press to cancel the input number when 0 to 9 are used.

⑰ 0 to 9 buttons

Press to directly select the desired track, preset tuning or disc. Buttons 1 to 6 can operate the preset tuning for the tuner or disc number search for the multi-CD player.

■

⑱ PGM button

Press to operate the preprogrammed functions for each source.

D

⑲ MUTE button

Press to turn off the sound. To turn on the sound, press again.

⑳ ENT button

Press to change to the entertainment display.

■

㉑ AUDIO button

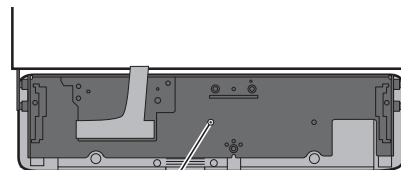
Press to select various sound quality controls. ■

E

F

Fastening the front panel

If you do not plan to detach the front panel, the front panel can be fastened with supplied screw.

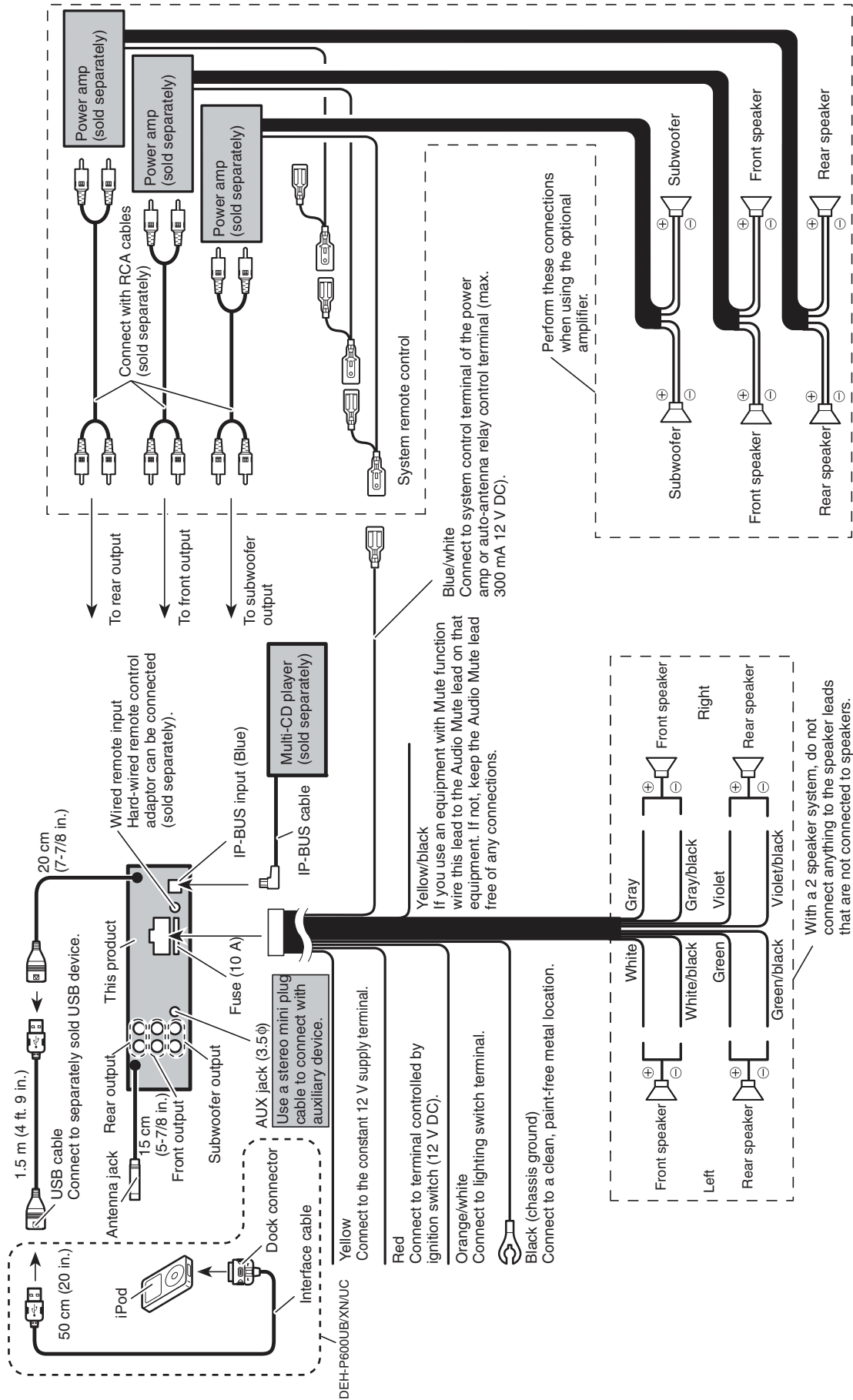


Service screw
XXX7019

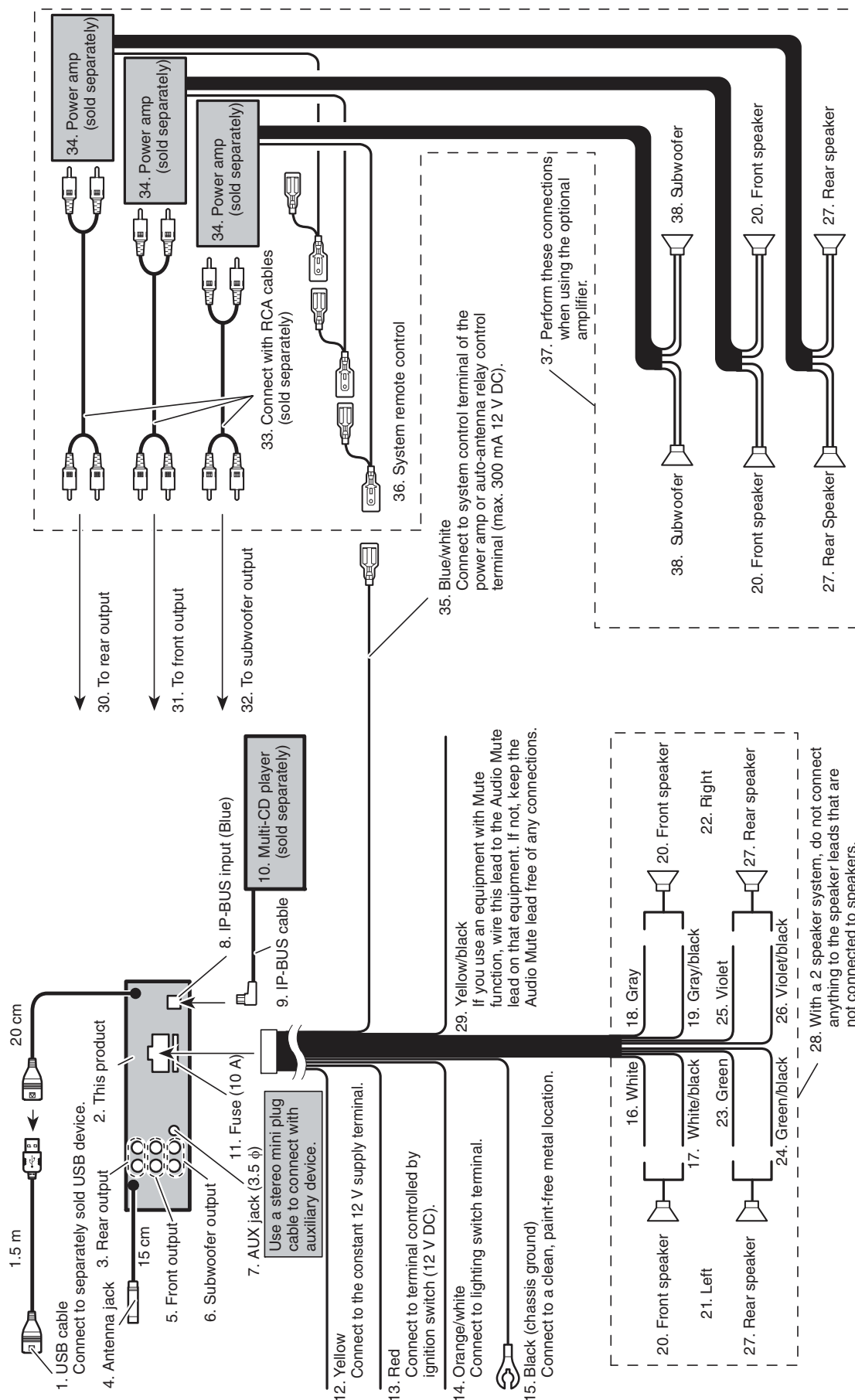
2.4 CONNECTION DIAGRAM

● DEH-P600UB/XN/UC, DEH-P6000UB/XN/UC

When not connecting a rear speaker lead to a subwoofer



● DEH-P6050UB/XN/ES, /ES1



3. BASIC ITEMS FOR SERVICE

3.1 CHECK POINTS AFTER SERVICING

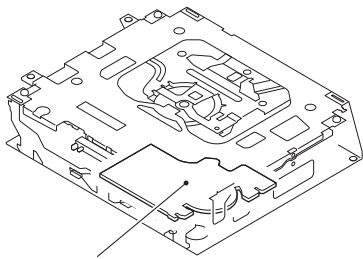
To keep the product quality after servicing, please confirm following check points.

No.		Procedures	Item to be confirmed
1		Confirm whether the customer complain has been solved. If the customer complain occurs with the specific media, use it for the operation check.	The customer complain must not be reappeared. Display, audio and operations must be normal.
2	CD	Play back a CD. (Track search)	No malfunction on display, audio and operation. Display, audio and operations must be normal.
3	FM/AM tuner	Check FM/AM tuner action. (Seek, Preset) Switch band to check both FM and AM.	Display, audio and operations must be normal.
4		Check whether no disc is inside the product.	The media used for the operating check must be ejected.
5		Appearance check	No scratches or dirt on its appearance after receiving it for service.

See the table below for the items to be checked regarding audio:

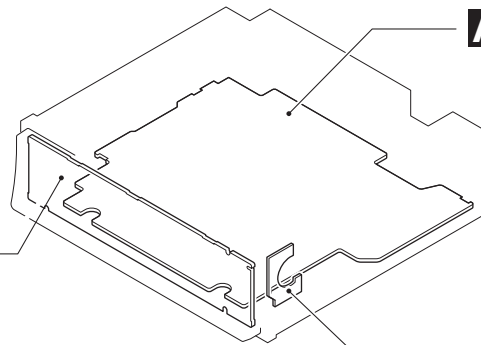
Item to be checked regarding audio
Distortion
Noise
Volume too low
Volume too high
Volume fluctuating
Sound interrupted

3.2 PCB LOCATIONS



C CD Core Unit
(S10.5COMP2-iPod)

Unit Number : CWN3149(P600UB)
 Unit Number : CWN3148(P6000UB)
 Unit Number : CWN3150(P6050UB)
 Unit Name : Tuner Amp Unit
 Unit Number : (P600UB)
 Unit Number : (P6000UB)
 Unit Number : (P6050UB)
 Unit Name : Keyboard Unit
 Unit Number : CWX3526
 Unit Name : CD Core Unit
 (S10.5COMP2-iPod)
 Unit Number : CWS1389
 Unit Name : Switch Unit



A Tuner Amp Unit

B Keyboard Unit

D Switch Unit

3.3 JIGS LIST

● Jigs List

Name	Jig No.	Remarks
Test Disc	TCD-782	Checking the grating
L.P.F.		Checking the grating (Two pieces)

● Grease List

Name	Grease No.	Remarks
Grease	GEM1024	Drive Unit , CD Mechanism Module
Grease	GEM1041	Drive Unit
Grease	GEM1045	CD Mechanism Module
Grease	GEM1069	Drive Unit

3.4 CLEANING

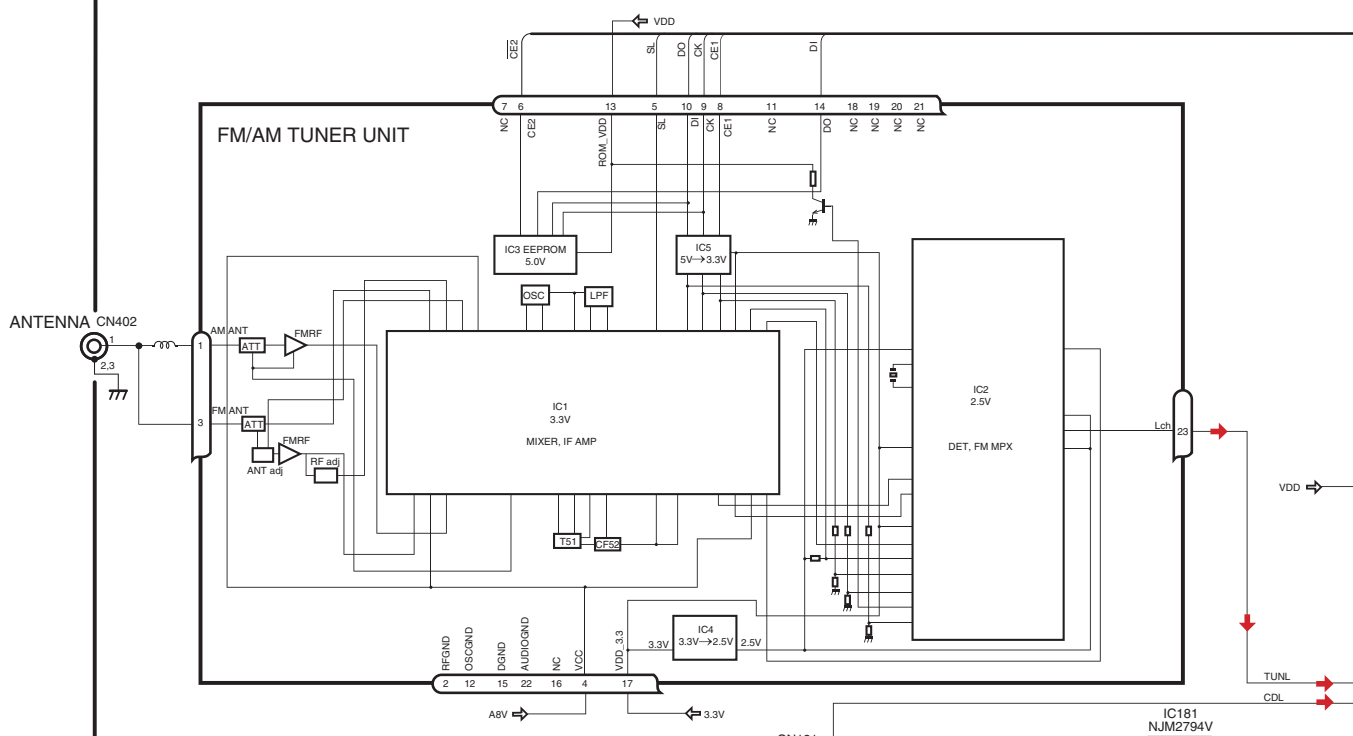


Before shipping out the product, be sure to clean the following portions by using the prescribed cleaning tools:

Portions to be cleaned	Cleaning tools
CD pickup lenses	Cleaning liquid : GEM1004 Cleaning paper : GED-008

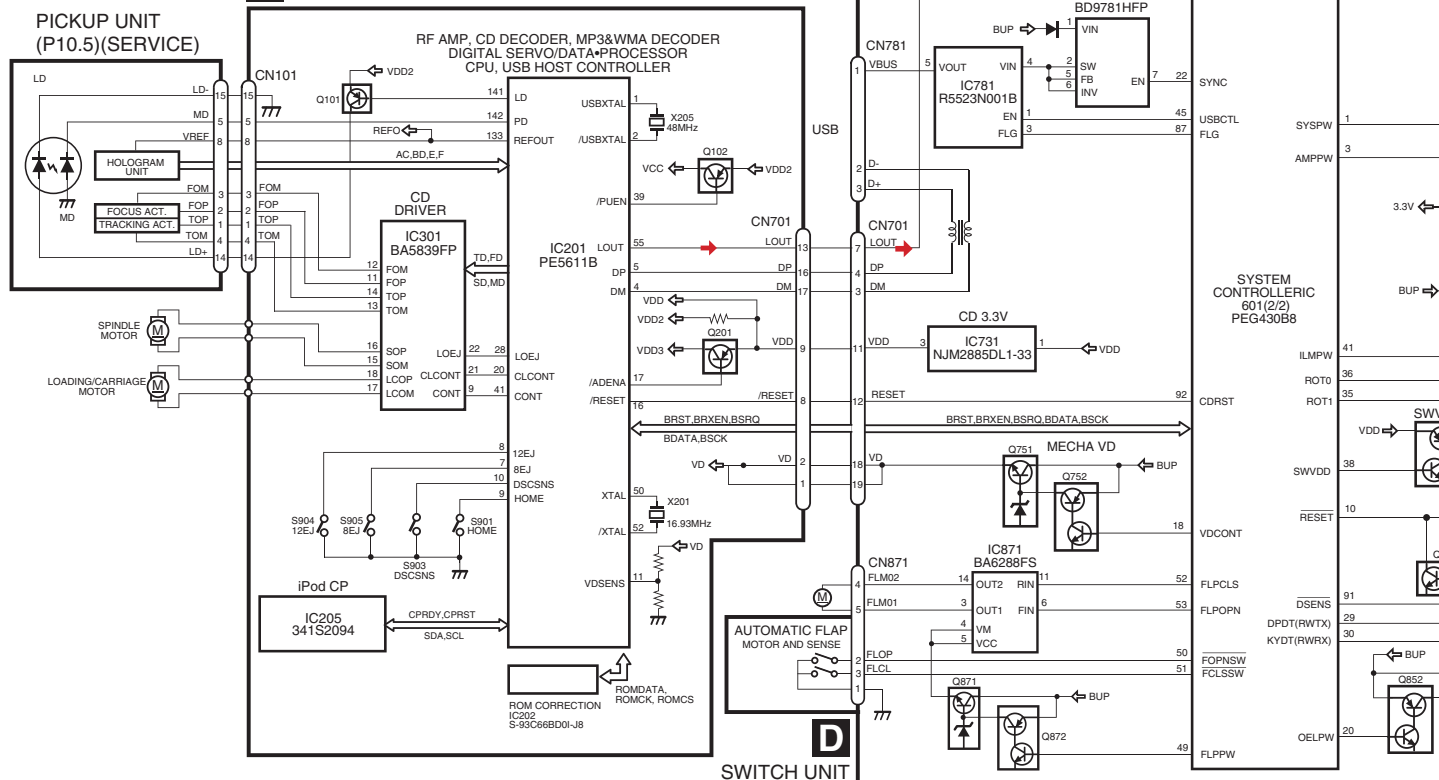
4. BLOCK DIAGRAM

A TUNER AMP UNIT



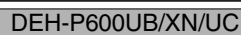
- Ⓐ : DEH-P600UB/XN/UC
- Ⓑ : DEH-P6000UB/XN/UC
- Ⓒ : DEH-P6050UB/XN/ES1, /ES

C CD CORE UNIT(S10.5COMP2-iPod)

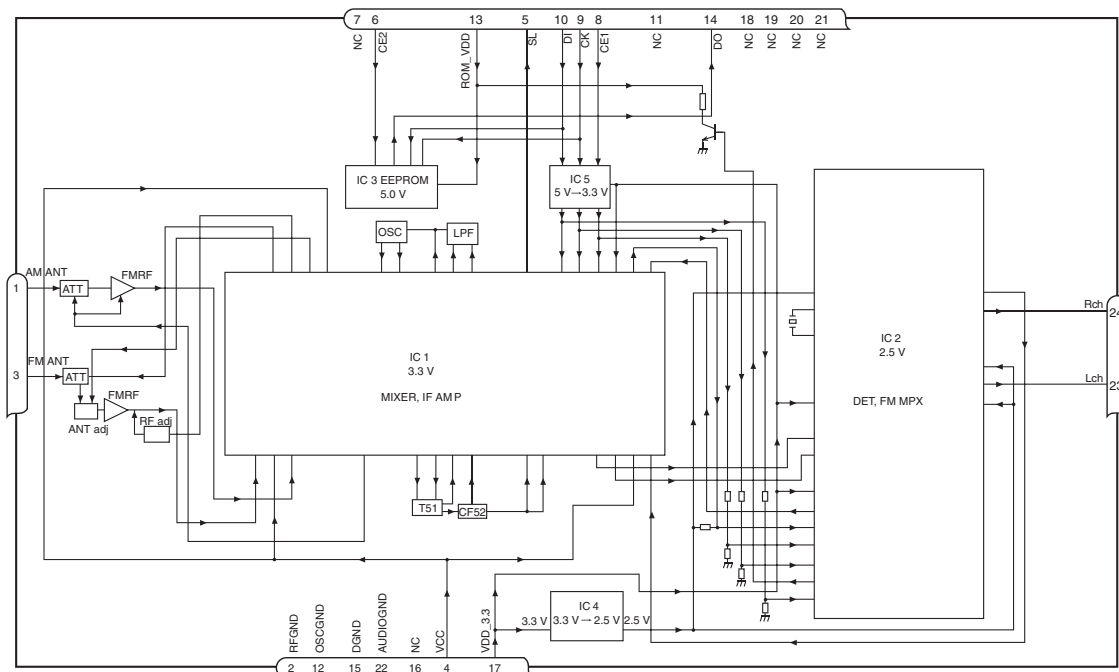


D SWITCH UNIT

DEH-P600UB/XN/UC



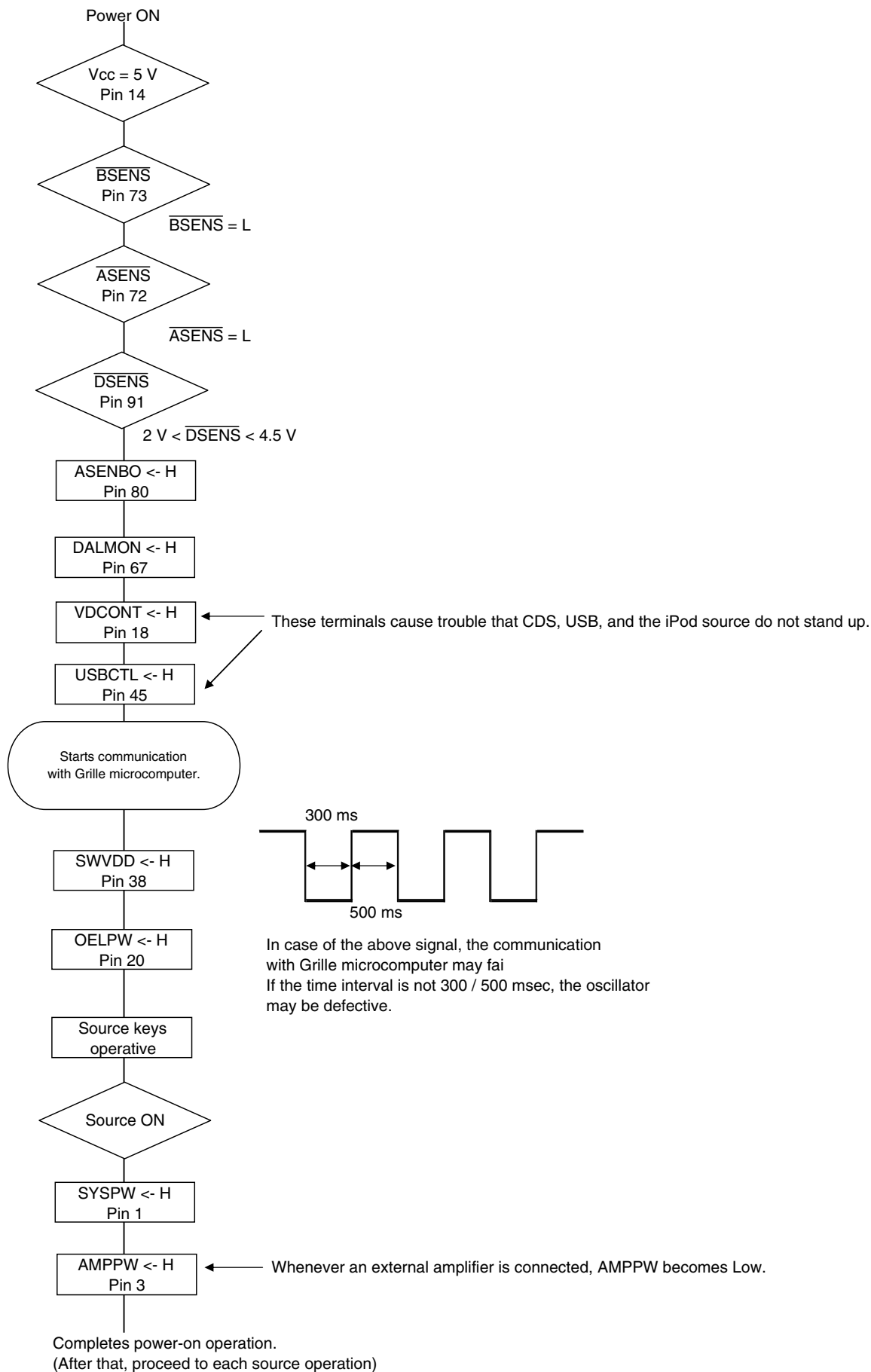
FM/AM Tuner Unit



No.	Symbol	I/O	Explain
1	AMANT	I	AM antenna input AM antenna input high impedance AMANT pin is connected with an all antenna by way of 4.7 μ H. (LAU type inductor) A series circuit including an inductor and a resistor is connected with RF ground for the countermeasure against the hum of power transmission line.
2	RFGND		RF ground Ground of antenna block
3	FMANT	I	FM antenna input Input of FM antenna 75 Ω Surge absorber (DSP-201M-S00B) is necessary.
4	VCC		power supply The power supply for analog block. D.C 8.4 V \pm 0.3 V
5	SL	O	signal level Output of FM/AM signals level
6	CE2	I	chip enable-2 Chip enable for EEPROM "Low" active input
7	NC		non connection Not used
8	CE1	I	chip enable-1 Chip enable for AF•RF "High" active
9	CK	I	clock Clock input
10	DI	I	data in Data input
11	NC		non connection Not used
12	OSCGND		osc ground Ground of oscillator block
13	ROM_VDD		power supply Power supply for EEPROM pin 13 is connected with a power supply of micro computer.
14	DO	O	data out Data output
15	DGND		digital ground Ground of digital block
16	NC		non connection Not used
17	VDD_3.3		power supply The power supply for digital block. 3.3 V \pm 0.2 V
18	NC		non connection Not used
19	NC		non connection Not used
20	NC		non connection Not used
21	NC		non connection Not used
22	AUDIOGND		audio ground Ground of audio block
23	L ch	O	L channel output FM stereo "L-ch" signal output or AM audio output
24	R ch	O	R channel output FM stereo "R-ch" signal output or AM audio output

5. DIAGNOSIS

5.1 OPERATIONAL FLOWCHART



5.2 ERROR CODE LIST

● Error Messages

If a CD is not operative or stopped during operation due to an error, the error mode is turned on and cause(s) of the error is indicated with a corresponding number. This arrangement is intended at reducing nonsense calls from the users and also for facilitating trouble analysis and repair work in servicing.

(1) Basic Indication Method

1) When SERRORM is selected for the CSMOD (CD mode area for the system), error codes are written to DMIN (minutes display area) and DSEC (seconds display area). The same data is written to DMIN and DSEC. DTNO remains in blank as before.

2) Head unit display examples

Depending on display capability of LCD used, display will vary as shown below. xx contains the error number.

8-digit display

ERROR-xx

6-digit display

ERR-xx

4-digit display

E-xx

(2) Error Code List

Code	Class	Displayed error code	Description of the code and potential cause(s)
10	Electricity	Carriage Home NG SERVO LSI Com- munication Error	CRG can't be moved to inner diameter. CRG can't be moved from inner diameter. -> Failure on home switch or CRG move mechanism. Communication error between microcomputer and SERVO LSI.
11	Electricity	Focus Servo NG	Focusing not available. -> Stains on rear side of disc or excessive vibrations on REWRITABLE.
12	Electricity	Spindle Lock NG Subcode NG	Spindle not locked. Sub-code is strange (not readable). -> Failure on spindle, stains or damages on disc, or excessive vibrations. A disc not containing CD-R data is found. Turned over disc are found, though rarely. CD signal error.
17	Electricity	Setup NG	AGC protection doesn't work. Focus can be easily lost. -> Damages or stains on disc, or excessive vibrations on REWRITABLE.
30	Electricity	Search Time Out	Failed to reach target address. -> CRG tracking error or damages on disc.
44	Electricity	ALL Skip	Skip setting for all track. (CD-R/RW)
50	Mechanism	CD On Mech Error	Mechanical error during CD ON. -> Defective loading motor, mechanical lock and mechanical sensor.
A0	System	Power Supply NG	Power (VD) is ground faulted. -> Failure on SW transistor or power supply (failure on connector).

Remarks: Mechanical errors are not displayed (because a CD is turned off in these errors).

Unreadable TOC does not constitute an error. An intended operation continues in this case.

Upper digits of an error code are subdivided as shown below:

1x: Setup relevant errors, 3x: Search relevant errors, Ax: Other errors.

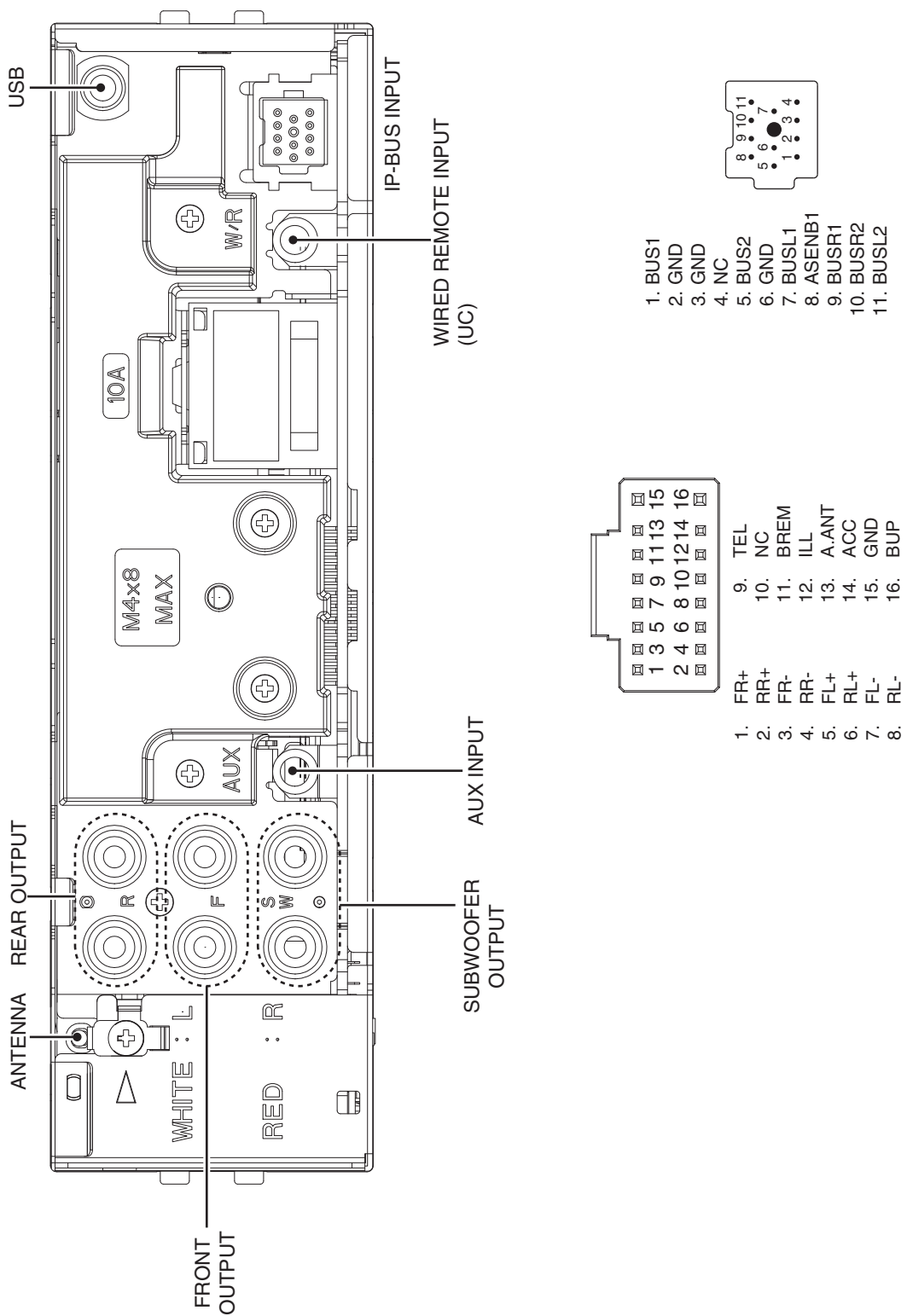
iPod error

Message	Cause	Action
NO SONGS	No songs in the iPod	Transfer the songs to the iPod.
STOP	No songs in the current list	Select a list that contains the songs.
ERROR-19	Communication failure	Disconnect the cable from the iPod. Once the iPod main menu is displayed, connect the cable again.
	iPod failure	Reset the iPod.
ERROR-18 N/A USB	Old version of the iPod	Update the iPod version.
	iPod failure	Reset the iPod.
ERROR-16	Old version of the iPod	Update the iPod version.
	iPod failure	Disconnect the cable from the iPod. Once the iPod main menu is displayed, connect the cable again.
		Reset the iPod.
		Turn the ignition switch OFF and ON.
		Malfunction of iPod recognition IC.
CHECK USB	iPod is not charged but operates correctly.	Check if the connection cable for the iPod shorted out. After checking, switch the ignition key OFF and ON, or disconnect the iPod and connect again.

USB error

Message	Cause	Action
NO AUDIO	No songs in the USB device	Transfer the songs to the USB device.
	USB memory with security enabled is connected	Follow the USB memory instructions to disable the security.
TRK SKIPPED	The connected USB device contains WMA files that are protected by DRM	Play an audio file not protected by DRM.
PROTECT	All the files in the USB device are protected by DRM	Transfer the songs not protected by DRM to the USB device.
N/A USB	The connected USB device is not supported by this unit	Connect a USB device that is compliant as a Mass Storage Class.
CHK USB	The USB connector or the USB cable is short-circuited	Confirm the USB connector or the USB cable.
	The connected USB device consumes more than 500 mA (max. allowable current)	Confirm the USB device.
ERROR-19	Communication failure	Turn the ignition switch OFF and ON.
		Disconnect the USB device, and connect it again.
		Change to a different source. Then, return to the USB.
ERROR-23	USB device is not formatted with FAT16 or FAT32	Format the USB device with FAT16 or FAT32.

5.3 CONNECTOR FUNCTION DESCRIPTION



6. SERVICE MODE

6.1 TEST MODE

Double Key Allocation List

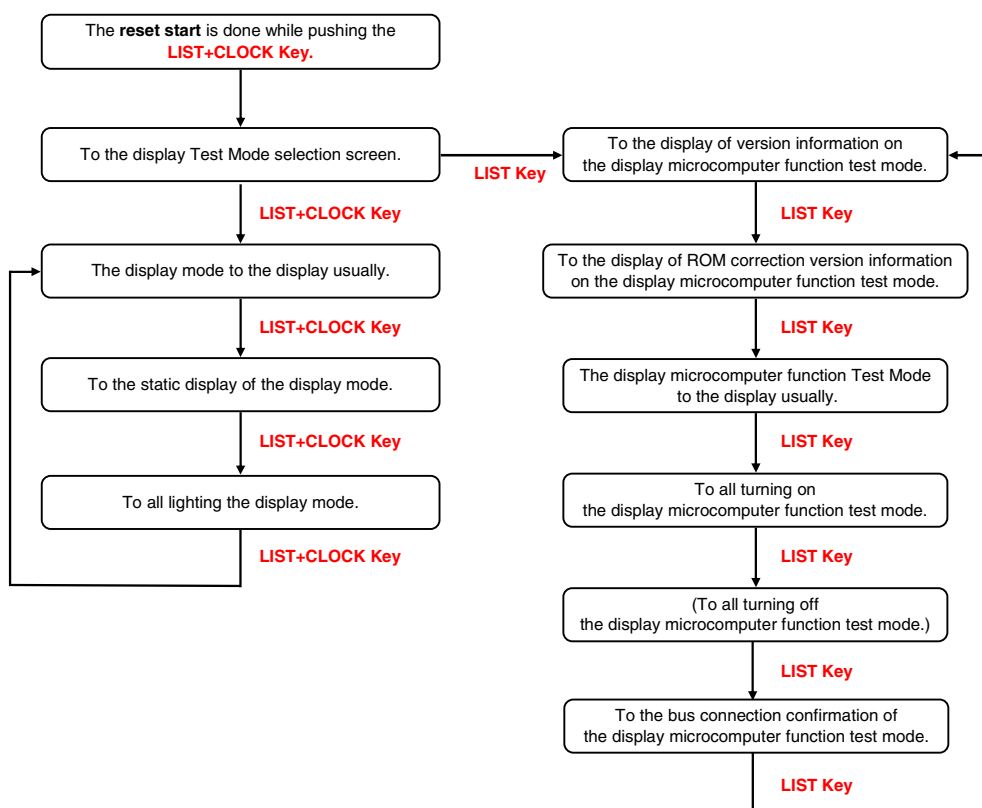
Double Key	Mode Name
S.Rtrv + DISP	CD Test Mode
LIST + CLOCK	Display Test Mode
DISP + BAND/ESC	(Eject Lock)

The mode in () is except test mode.

6.2 DISPLAY TEST MODE

Display Test Mode

Restarted pushing reset while pushing the **LIST+CLOCK key** then the screen is changed to the display test mode.



Version Information Display

0	8	16	24	32	40	48	56	64	72	80	88	96	04	12	20	28	36	44	52	60
8	V	e	r	s	i	o	n	I	n	f	o	.								
16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
24	D	I	S	P		V	#	.	#	#										
32	P	I	C	T		V	!	.	!	!										
40	S	Y	S		V	*	.	*	*											
48																				

PD number of Display microcomputer and Image ROM is not displayed.

#.## : Display microcomputer Ver.Info
 !.!! : Image ROM Ver.Info
 *.** : System microcomputer Ver.Info

<Unit number display>

When the Unit number is CWW1453, it is displayed as 1453.
 (Only the number from 0 to 9 can be displayed by four digits.)

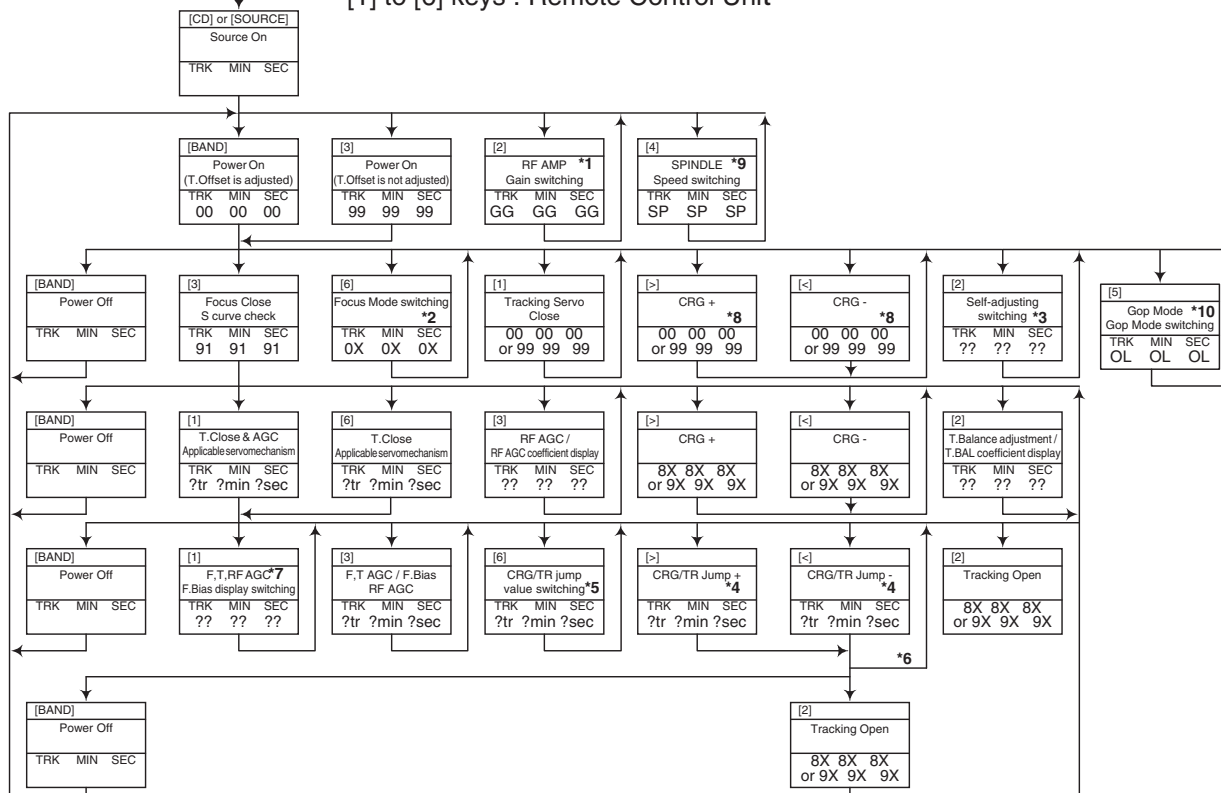
*The display of the PD number disappears.

6.3 CD TEST MODE

Flow Chart

[Key]
Contents
Display

[1] to [6] keys : Remote Control Unit



*1) TYP -> + 6 dB -> + 12 dB
TRK MIN SEC TRK₀₆MIN₀₆SEC₀₆ TRK₁₂MIN₁₂SEC₁₂

*2) Focus Close -> S.Curve -> F EQ measurement setting
TRK₀₀MIN₀₀SEC₀₀ TRK₀₁MIN₀₁SEC₀₁ TRK₀₂MIN₀₂SEC₀₂
(TRK₉₉MIN₉₉SEC₉₉)

*3) F.Offset Display -> RF.Offset -> T.Offset Display -> Switch to the order of the original display

*4) 1TR/4TR/10TR/32TR/100TR

*5) Single -> 4TR -> 10TR -> 32TR -> 100TR -> CRG Move
9x(8x):91(81) 92(82) 93(83) 94(84) 95(85) 96(86)

*6) Only at the time of CRG move, 100TR jump

*7) TRK/MIN/SEC -> F.AGC -> T.AGC Gain -> F Bias -> RF AGC

*8) CRG motor voltage = 2 [V]

*9) TYP (1X) -> 2X -> 1X
TRK MIN SEC TRK₂₂MIN₂₂SEC₂₂ TRK₁₁MIN₁₁SEC₁₁

*10) OFF(TYP) -> FORCUS -> TRACKING
TRK MIN SEC TRK₇₀MIN₇₀SEC₇₀ TRK₇₁MIN₇₁SEC₇₁

[Key]	Operation
[BAND]	Power On/Off
[>]	CRG + / TR Jump + (Direction of the external surface)
[<]	CRG - / TR Jump - (Direction of the internal surface)
[1]	T. CLS & AGC & Applicable servomechanism / AGC, AGC display setting
[2]	RF Gain switching / Offset adjustment display / T.Balance adjustment / T. Open
[3]	F. Close, S Curve / Rough Servo and RF AGC / F.T, RF AGC
[4]	SPDL 1X/2X switching As for the double speed(2x), audio output <u>cannot</u> be supported.
[5]	Error Rate measurement ON : ERR 30 Counts Start BER display data[%]
[6]	F. Mode switching / Tracking Close / CRG•TR Jump Switching

- As for the double speed (2x), audio output cannot be supported
- After the [Eject] key is pressed keys other than the [Eject] key should not be pressed, until disc ejection is complete.
- When the key [2] or [3] is pressed during the Focus Search, the power supply should be immediately turned off (otherwise the lens sticks to Wall, causing the actuator to be damaged).
- In the case of TR jump other than to 100TR, the function shall continue to be processed even if the TR jump key is released. As for the CRG Move and 100TR Jump, the mechanism shall be set to the Tracking Close mode when the key is released.
- When the power is turned on/off the jump mode is reset to the Single TR (91) while the gain of the RFAMP is reset to 0 dB. At the same time all the self-adjusting values shall return to the default setting.

7. DISASSEMBLY

● Removing the Keyboard Unit (Fig.1, 2)

Remove the Knob Unit.(Fig.1)

1 Remove the four screws.(Fig.2)

Remove the Cover
and then remove the Keyboard Unit.



Knob Unit

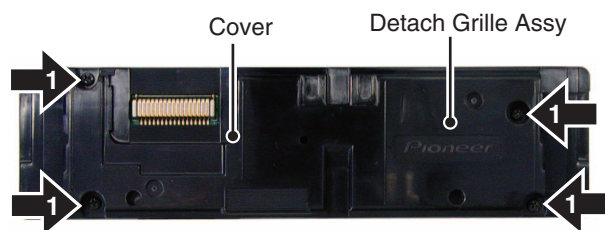


Fig.1

Fig.2

● Removing the Holder, Panel and Case (Fig.3)

Take off the pick of left and right
and then a Holder slide to the arrow course.

Remove the Panel.

Remove the Case.

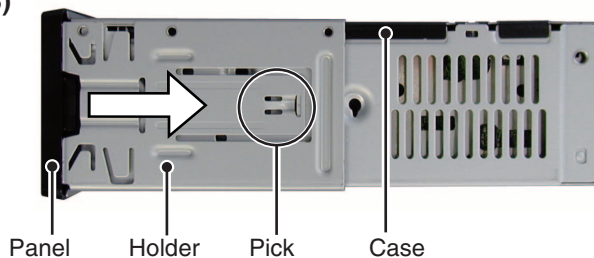
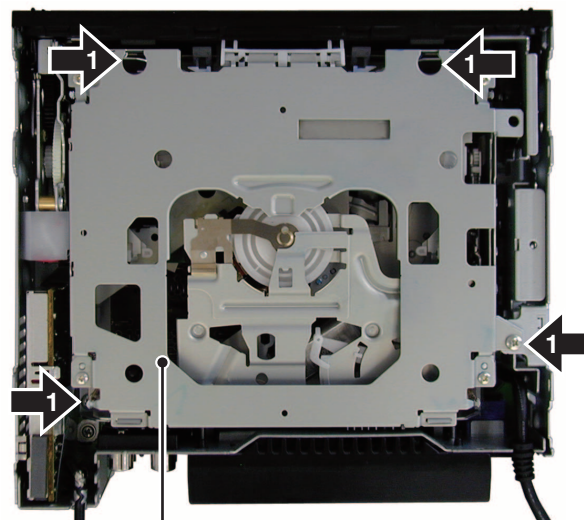


Fig.3

● Removing the CD Mechanism Module (Fig.4)

1 Remove the four screws.

Disconnect the cable
and then remove the CD Mechanism Module.



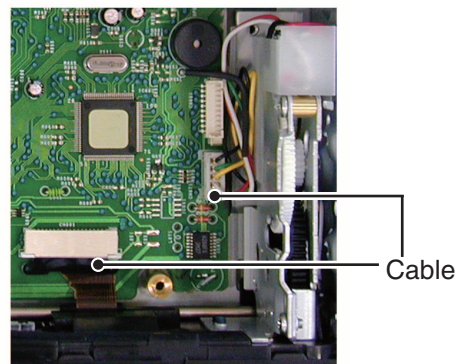
CD Mechanism Module

Fig.4

● Removing the Panel Assy(Fig.5, 6, 7)

Disconnect the two cables.(Fig.5)

Follw next

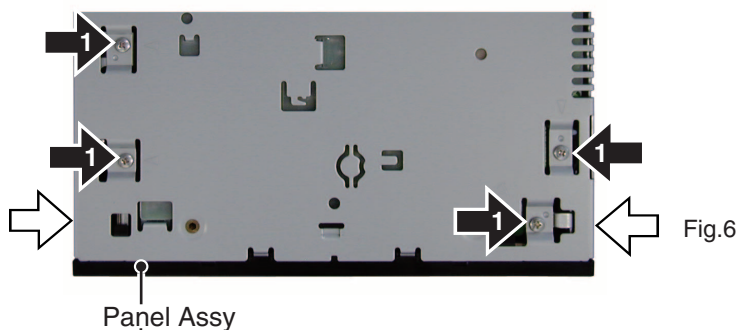


Cable

Fig.5

A The continuance from the page of before.

- ➡ 1 Remove the four screws.(Fig.6)



Push the place of the arrows
and then remove Panel Assy.(Fig.6, 7)

B

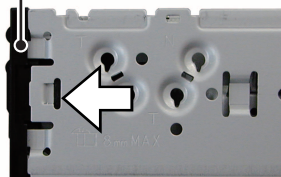


Fig.7

● Removing the Switch Unit(Fig.8, 9)

- ➡ 1 Remove the screw.(Fig.8)
- ➡ 2 Remove the three screws
and then the Holder.(Fig.8)
- ➡ 3 Remove the two screws
and then remove the Switch Unit.(Fig.9)

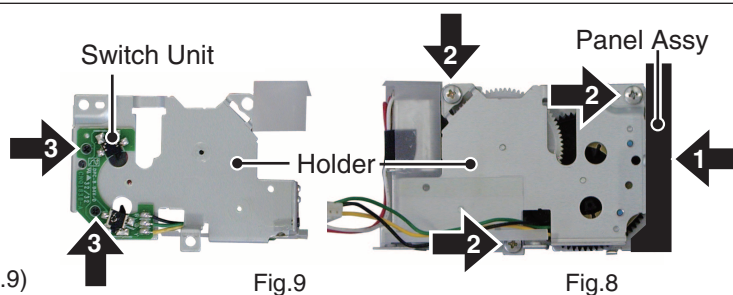


Fig.9

Fig.8

● Removing the Tuner Amp Unit(Fig.10, 11)

- ➡ 1 Remove the screw
and then remove the Holder.(Fig.10)
- ➡ 2 Remove the screw.(Fig.10)
- ➡ 3 Remove the screws.(Fig.11)
- ➡ 4 Remove the screw
and then remove the Holder.(Fig.11)
- ➡ 5 Straighten the tabs at three locations
indicated
and then remove the Tuner Amp Unit.
(Fig.11)

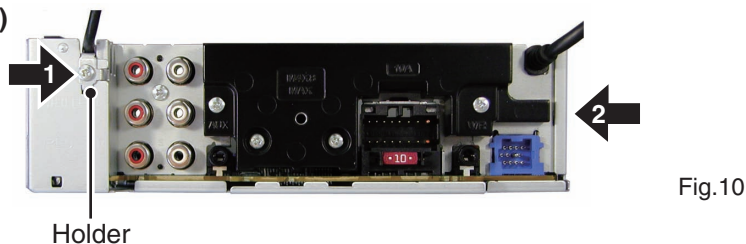


Fig.10

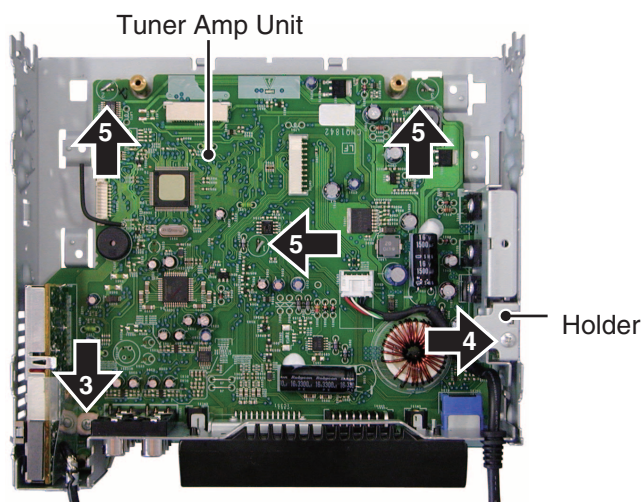
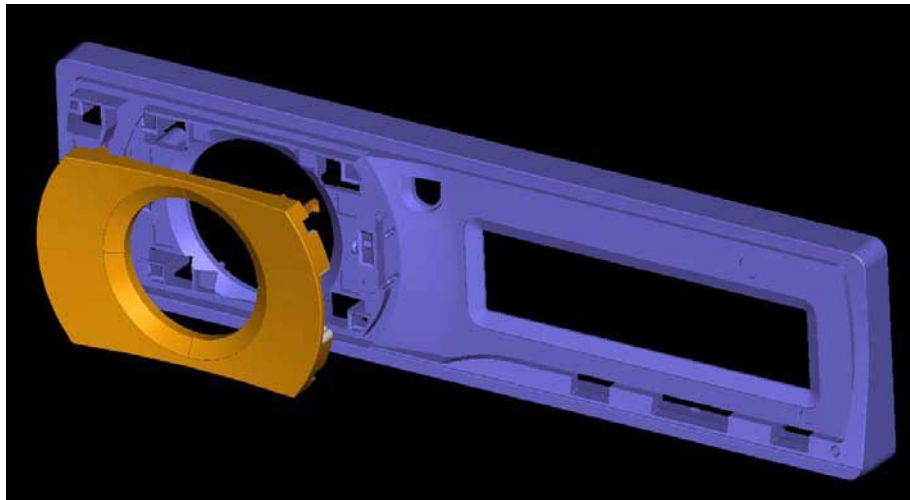


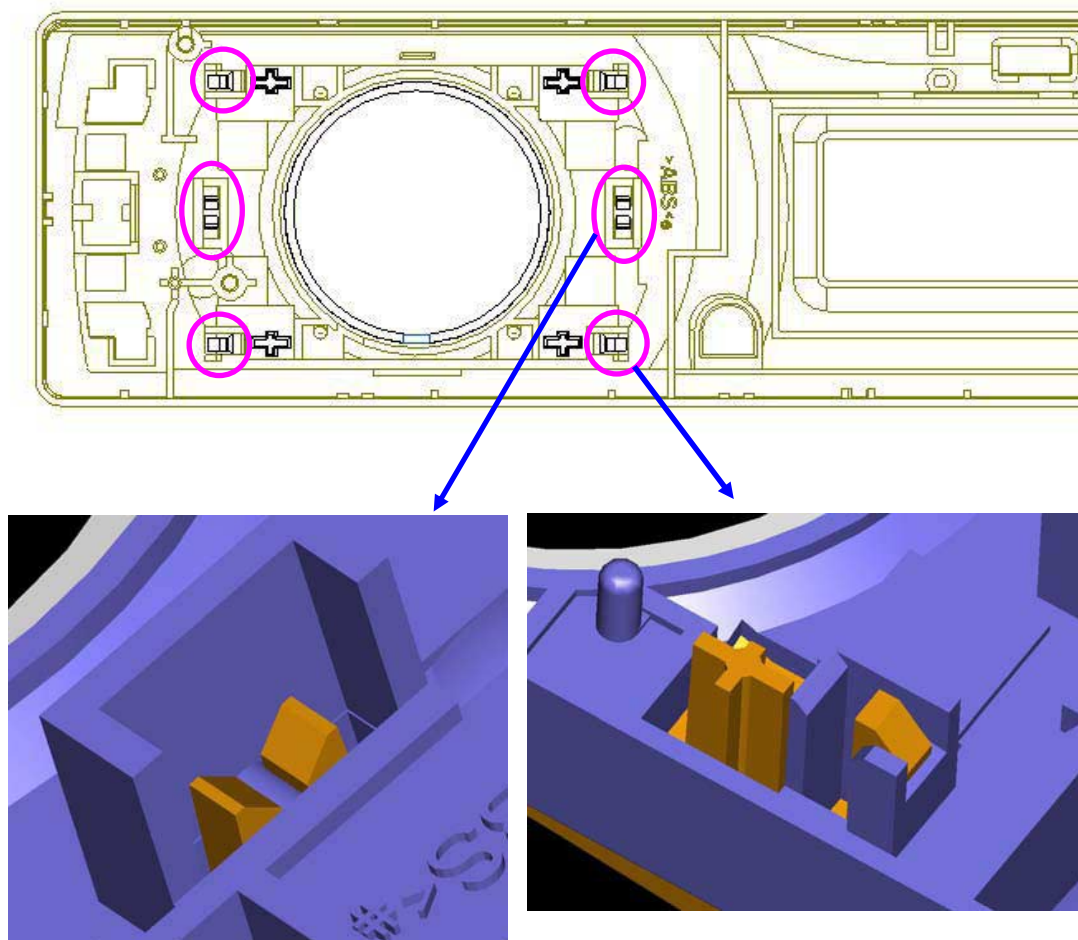
Fig.11

F

●How from grille to remove plate button.



①There are six hooks to remove.

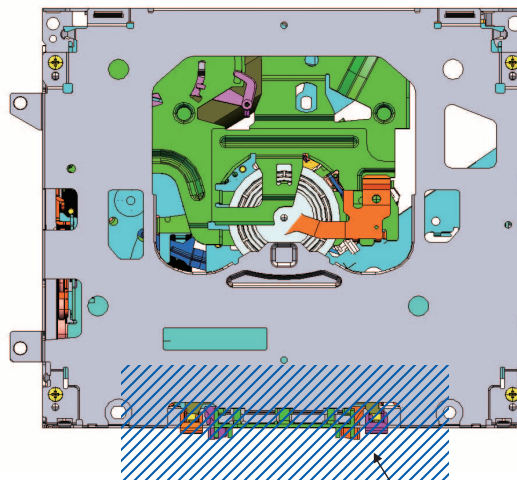


The hook in six places in total is removed by the thin one such as tweezers.

* The hook breaks when forcibly removing.

● How to hold the Mechanism Unit

1. Hold the Upper and Lower Frames.
2. Do not hold the front portion of the Upper Frame, because it is not very solid.

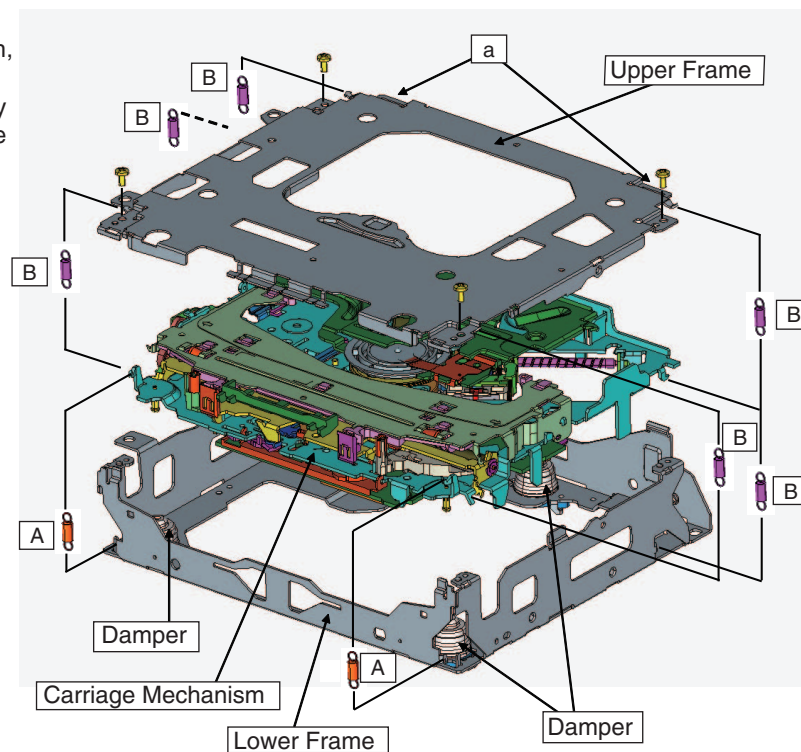


Do not squeeze this area.

● Removing the Upper and Lower Frames

1. With a disc inserted and clamped in the mechanism, remove the two Springs (A), the six Springs (B), and the four Screws.
2. Turn the Upper Frame using the part "a" as a pivot, and remove the Upper Frame.
3. While lifting the Carriage Mechanism, remove it from the three Dampers.

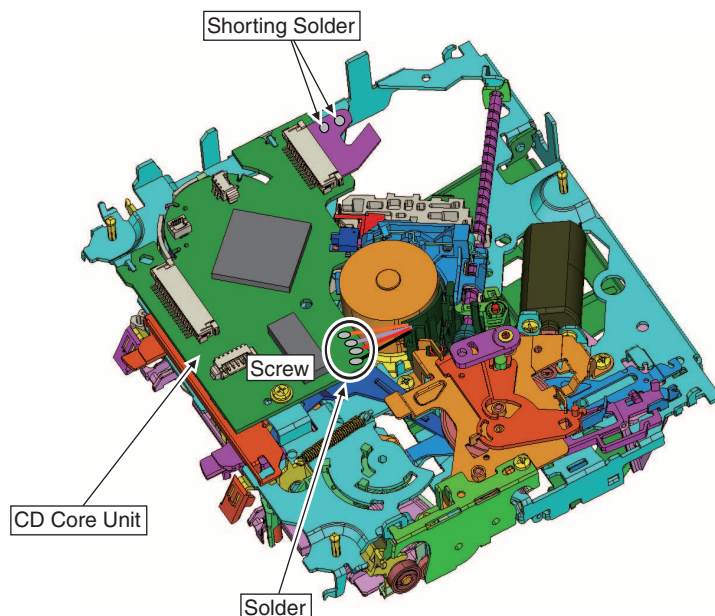
Caution: When assembling, be sure to apply some alcohol to the Dampers and assemble the mechanism in a clamped state.



● How to remove the CD Core Unit

1. Apply Shorting Solder to the flexible cable of the Pickup, and disconnect it from the connector.
2. Unsolder the four leads, and loosen the Screw.
3. Remove the CD Core Unit.

Caution: When assembling the CD Core Unit, assemble it with the SW in a clamped state so as not to damage it.

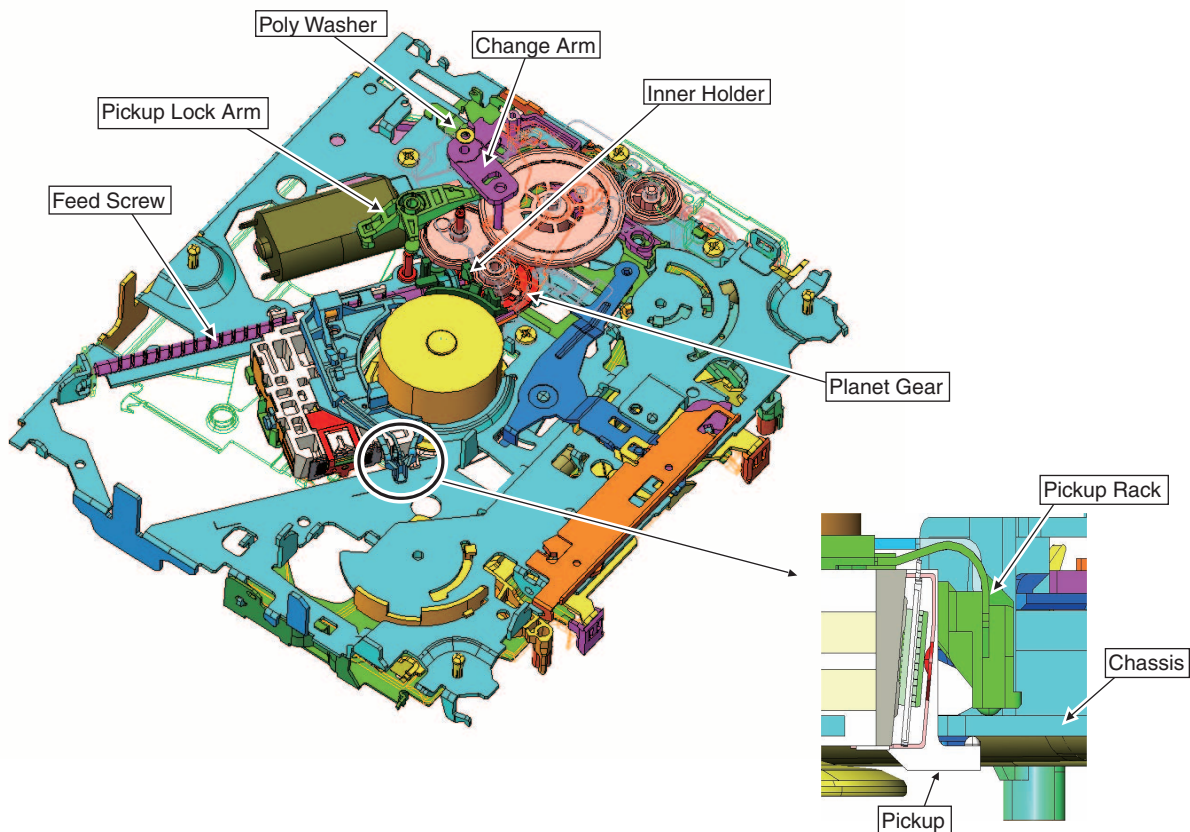


● How to remove the Pickup Unit

1. Make the system in the carriage mechanism mode, and have it clamped.
2. Remove the CD Core Unit and remove the leads from the Inner Holder.
3. Remove the Poly Washer, Change Arm, and Pickup Lock Arm.
4. While releasing from the hook of the Inner Holder, lift the end of the Feed Screw.

Caution: When assembling, move the Planet Gear to the load/eject position before setting the Feed Screw in the Inner Holder.

Assemble the sub unit side of the Pickup, taking the plate (Chassis) in-between. When treating the leads of the Load Carriage Motor Assy, do not make them loose over the Feed Screw.



8. EACH SETTING AND ADJUSTMENT

8.1 CD ADJUSTMENT

1) Cautions on adjustments

- In this product the single voltage (3.3V) is used for the regulator. The reference voltage is the REFO1 (1.65 V) instead of the GND.

If you should mistakenly short the REFO1 with the GND during adjustment, accurate voltage will not be obtained, and the servo's misoperation will apply excessive shock to the pickup. To avoid such problems:

- a. Do not mix up the REFO1 with the GND when connecting the (-) probe of measuring instruments. Especially on an oscilloscope, avoid connecting the (-) probe for CH1 to the GND.
- b. In many cases, measuring instruments have the same potential as that for the (-) probe. Be sure to set the measuring instruments to the floating state.
- c. If you have mistakenly connected the REFO1 to the GND, turn off the regulator or the power immediately.

- Before mounting and removing filters or leads for adjustment, be sure to turn off the regulator.

- For stable circuit operation, keep the mechanism operating for about one minute or more after the regulator is turned on.

- In the test mode, any software protections will not work. Avoid applying any mechanical or electrical shock to the mechanism during adjustment.

- The RFI and RFO signals with a wide frequency range are easy to oscillate. When observing the signals, insert a resistor of 1k ohms in series.

- The load and eject operation is not guaranteed with the mechanism upside down. If the mechanism is blocked due to mistaken eject operation, reset the product or turn off and on the ACC to restore it.

2) Test mode

This mode is used to adjust the CD mechanism module.

- To enter the test mode.
While pressing the 4 and 6 keys at the same time, reset.
- To exit from the test mode.
Turn off the ACC and back up.

Notes:

- a. During ejection, do not press any other keys than the EJECT key until the loaded disc is ejected.
- b. If you have pressed the (->) key or (-<) key during focus search, turn off the power immediately to protect the actuator from damage caused by the lens stuck.
- c. For the TR jump modes except 100TR, the track jump operation will continue even if the key is released.
- d. For the CRG move and 100TR jump modes, the tracking loop will be closed at the same time when the key is released.
- e. When the power is turned off and on, the jump mode is reset to the singleTR (91), the RF amp gain is set to 0 dB, and the auto-adjustment values are reset to the default settings.

8.2 CHECKING THE GRATING AFTER CHANGING THE PICKUP UNIT



• Note :

The grating angle of the PU unit cannot be adjusted after the PU unit is changed. The PU unit in the CD mechanism module is adjusted on the production line to match the CD mechanism module and is thus the best adjusted PU unit for the CD mechanism module. Changing the PU unit is thus best considered as a last resort. However, if the PU unit must be changed, the grating should be checked using the procedure below.

• Purpose :

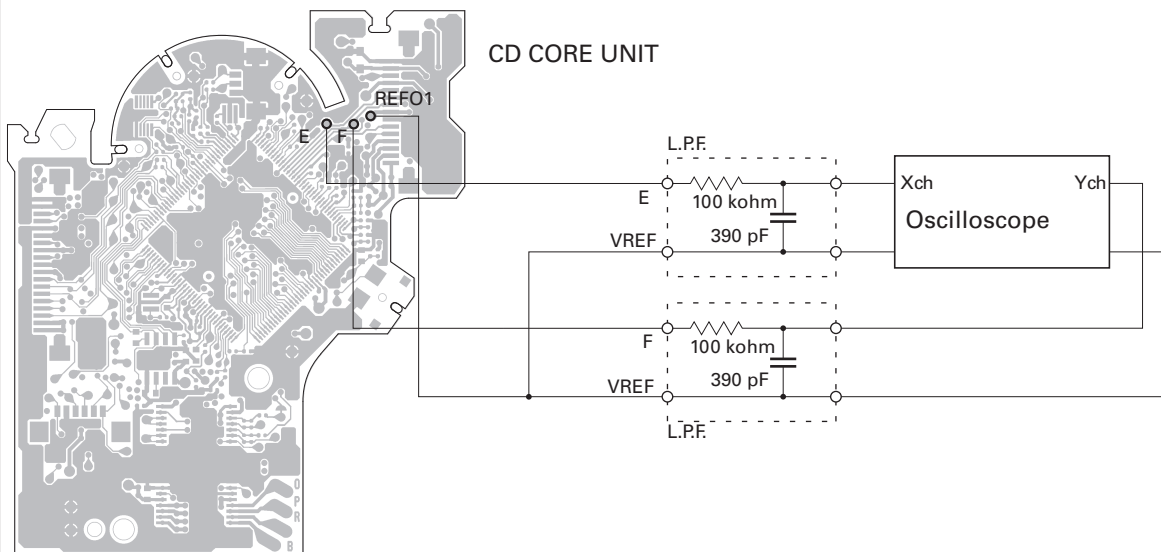
To check that the grating is within an acceptable range when the PU unit is changed.

• Symptoms of Mal-adjustment :

If the grating is off by a large amount symptoms such as being unable to close tracking, being unable to perform track search operations, or taking a long time for track searching.

• Method :

- | | |
|-----------------------|----------------------------|
| • Measuring Equipment | • Oscilloscope, Two L.P.F. |
| • Measuring Points | • E, F, REFO1 |
| • Disc | • TCD-782 |
| • Mode | • TEST MODE |



• Checking Procedure

1. In test mode, load the disc and switch the 3 V regulator on.
2. Using the -> and <- buttons, move the PU unit to the innermost track.
3. Press key 3 to close focus, the display should read "91". Press key 2 to implement the tracking balance adjustment the display should now read "81". Press key 3. The display will change, returning to "81" on the fourth press.
4. As shown in the diagram above, monitor the LPF outputs using the oscilloscope and check that the phase difference is within 75 degrees. Refer to the photographs supplied to determine the phase angle.
5. If the phase difference is determined to be greater than 75 degrees try changing the PU unit to see if there is any improvement. If, after trying this a number of times, the grating angle does not become less than 75 degrees then the mechanism should be judged to be at fault.

• Note

Because of eccentricity in the disc and a slight misalignment of the clamping center the grating waveform may be seen to "wobble" (the phase difference changes as the disc rotates). The angle specified above indicates the average angle.

• Hint

Reloading the disc changes the clamp position and may decrease the "wobble".

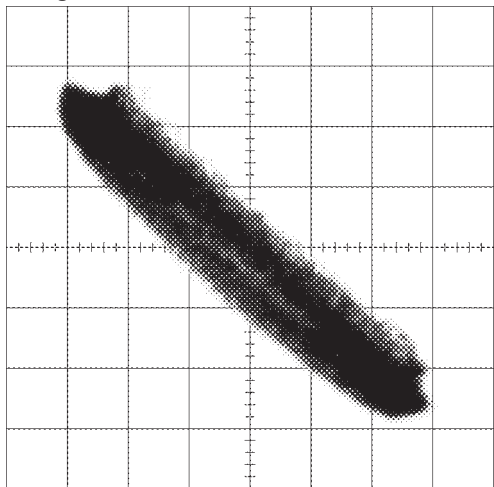
Grating waveform

Ech -> Xch 20 mV/div, AC

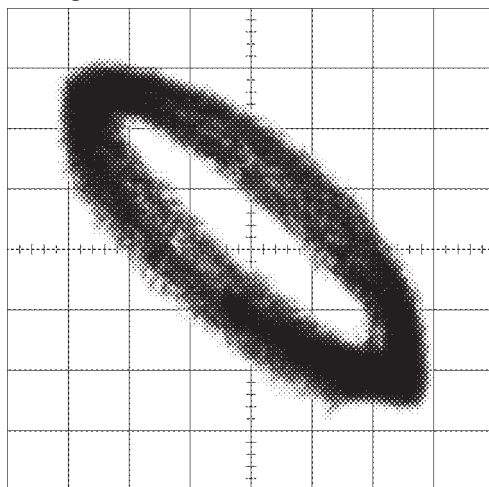
Fch -> Ych 20 mV/div, AC

A

0 degrees

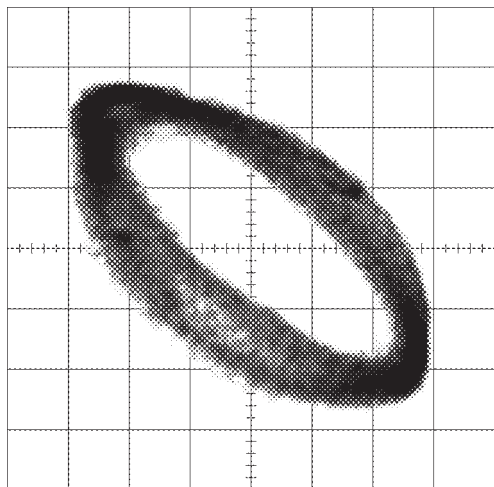


30 degrees

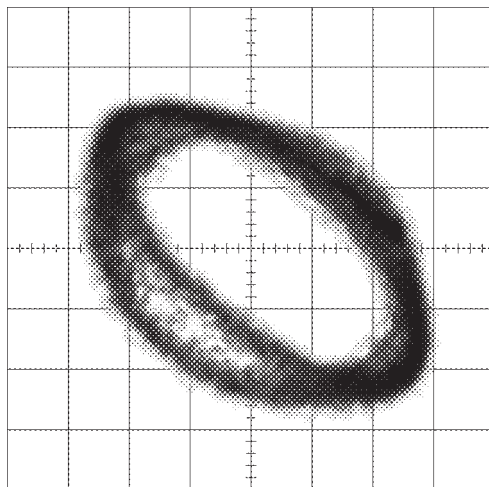


B

45 degrees



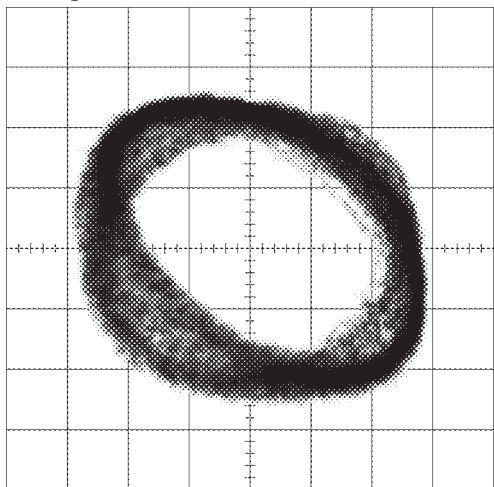
60 degrees



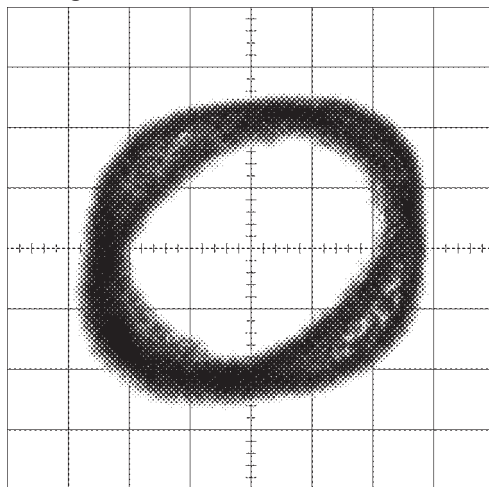
C

D

75 degrees



90 degrees



E

F

8.3 PCL OUTPUT CONFIRMATION



● PCL output

In the normal operation mode (with the detachable panel installed, the ACC switched ON, the standby mode cancelled), shift the STEST IC601(Pin 86) terminal to H.

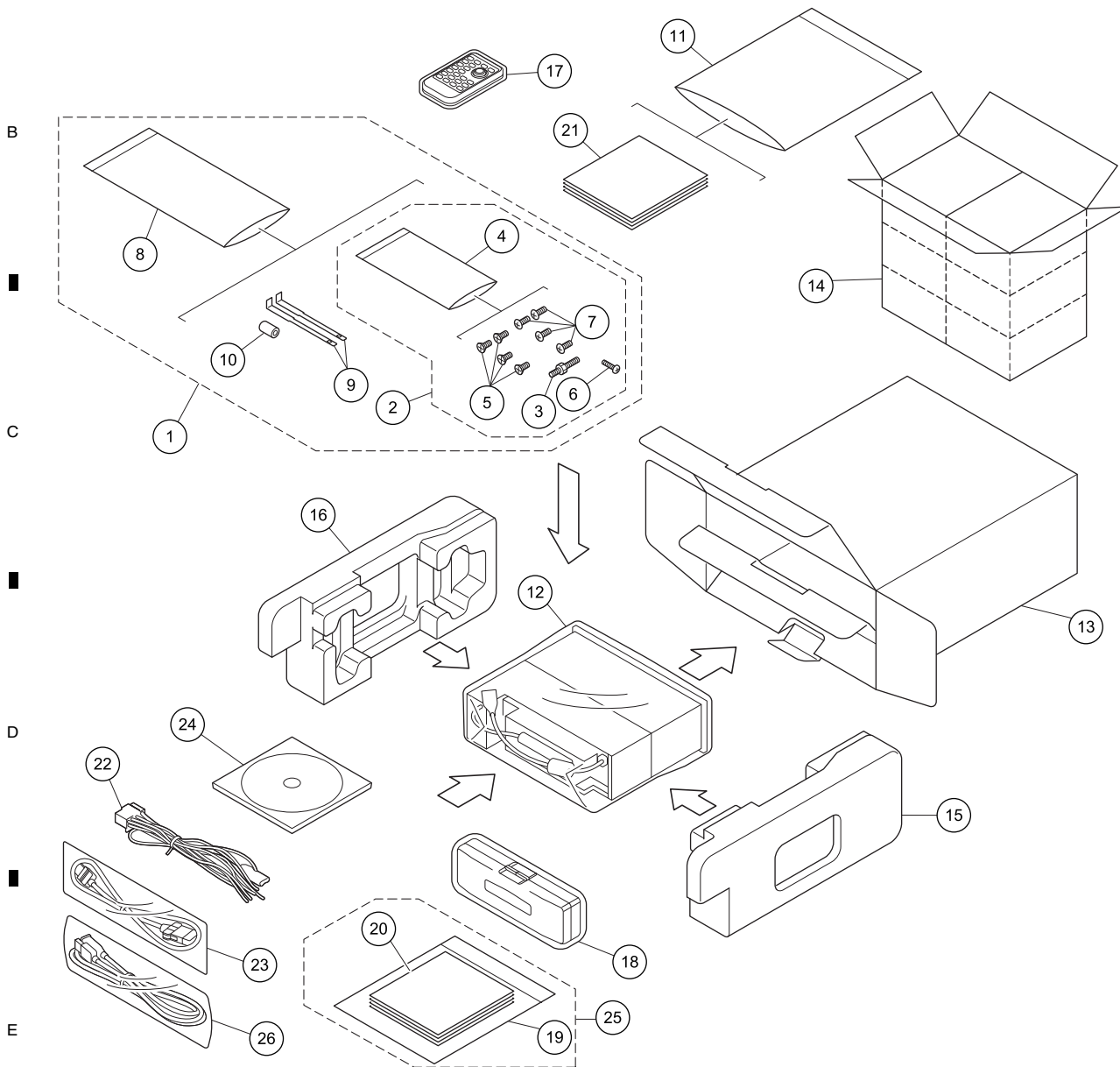
The clock signal is output from the PCL1 terminal IC601(Pin 37).

The frequency of the clock signal is 468.8 kHz that is one 32th of the fundamental frequency.

9. EXPLODED VIEWS AND PARTS LIST

- NOTES :
- Parts marked by " * " are generally unavailable because they are not in our Master Spare Parts List.
 - The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
 - Screw adjacent to ▽ mark on the product are used for disassembly.
 - For the applying amount of lubricants or glue, follow the instructions in this manual.
- (In the case of no amount instructions, apply as you think it appropriate.)

9.1 PACKING



(1) PACKING SECTION PARTS LIST

Mark No.	Description	Part No.	Mark No.	Description	Part No.
* 1	Accessory Assy	See Contrast table (2)	11	Polyethylene Bag	CEG1116
2	Screw Assy	See Contrast table (2)	12	Polyethylene Bag	See Contrast table (2)
3	Screw	CBA1650	13	Unit Box	See Contrast table (2)
* 4	Polyethylene Bag	CEG-127	14	Contain Box	See Contrast table (2)
5	Screw	CRZ50P090FTC	15	Protector	CHP3502
6	Screw	See Contrast table (2)	16	Protector	CHP3503
7	Screw	TRZ50P080FTC	17	Remote Control Unit	CXC9113
8	Polyethylene Bag	CEG1160	18	Case Assy	QXA3049
9	Handle	CND3707	* 19	Polyethylene Bag	CEG1250
10	Bush	CNV3930			

Mark No.	Description	Part No.
20	Quick Start Guide	See Language table (3)
21-1	Installation Manual	See Contrast table (2)
21-2	Caution Card	CRP1310
* 21-3	Caution Card	See Contrast table (2)
* 21-4	Caution Card	CRP1366
* 21-5	Caution Card	XRP7002
* 21-6	Caution Card	See Contrast table (2)
* 21-7	Warranty Card	See Contrast table (2)
* 21-8	Service Network	See Contrast table (2)
22	Cord Assy	XDP7004
23	Cord Assy	See Contrast table (2)
24	CD-ROM (Operation Manual)	See Contrast table (2)
25	Owner's Manual Assy	See Contrast table (2)
26	Cord Assy	CDP1040

(2) CONTRAST TABLE

DEH-P600UB/XN/UC, DEH-P6000UB/XN/UC, DEH-P6050UB/XN/ES and DEH-P6050UB/XN/ES1 are constructed the same except for the following:

Mark	No.	Description	DEH-P600UB/XN/UC	DEH-P6000UB/XN/UC	DEH-P6050UB/XN/ES	DEH-P6050UB/XN/ES1
*	1	Accessory Assy	CEA7316	CEA7316	CEA7317	CEA7317
	2	Screw Assy	CEA5322	CEA5322	CEA3849	CEA3849
	6	Screw	JPZ20P060FTB	JPZ20P060FTB	Not used	Not used
	12	Polyethylene Bag	CEG1368	CEG1368	CEG1227	CEG1227
	13	Unit Box	CHG6390	CHG6389	CHG6392	CHG6408
*	14	Contain Box	CHL6390	CHL6389	CHL6392	CHL6408
	21-1	Installation Manual	CRD4255	CRD4257	CRD4260	CRD4260
	21-3	Caution Card	CRP1365	CRP1365	CRP1364	CRP1364
	21-6	Caution Card	Not used	CRP1294	Not used	Not used
	21-7	Warranty Card	CRY1070	CRY1246	Not used	CRY1250
*	21-8	Service Network	Not used	Not used	Not used	CRY1251
	23	Cord Assy	CDP1041	Not used	Not used	Not used
	24	CD-ROM (Operation Manual)	CPJ1215	CPJ1216	CPJ1217	CPJ1217
	25	Owner's Manual Assy	CXC9691	CXC9692	CXC9693	CXC9693

(3) Language of Quick Start Guide

Mark	DEH-P600UB/XN/UC	DEH-P6000UB/XN/UC	Language
*	CRB2608	CRB2610	English
*	CRB2609	CRB2611	French
Mark	DEH-P6050UB/XN/ES, /ES1		Language
*	CRB2612		English
*	CRB2613		Spanish
*	CRB2614		Portuguese(B)
*	CRB2615		Traditional Chinese
*	CRB2616		Arabic

(4) CONTENTS OF CD-ROM (Operation Manual)

Mark	DEH-P600UB/XN/UC (CPJ1215)	DEH-P6000UB/XN/UC (CPJ1216)	Language
*	CRB2569	CRB2571	English
*	CRB2570	CRB2572	French
Mark	DEH-P6050UB/XN/ES, /ES1 (CPJ1217)		Language
*	CRB2573		English
*	CRB2574		Spanish
*	CRB2575		Portuguese(B)
*	CRB2576		Traditional Chinese
*	CRB2577		Arabic

All operation manuals are supplied in PDF files by the CD-ROM. No printed papers are available.

Mark	No.	Description	Part No.	Mark	No.	Description	Part No.
	1	Case	CNB3466	15	Double Side Tape	CNM8673	
	2	Holder	CND3598				
	3		16	Holder	CNV9886	A
	4	Panel	See Contrast tabel (2)	17	OEL Unit	MXS8260	
	5	Detach Grille Assy	See Contrast tabel (2)	18	Spacer	CNN2403	
				19	Grille Unit	See Contrast tabel (2)	
	6	Screw	BPZ20P080FTB	20	Knob Unit	See Contrast tabel (2)	
	7	Button(SRC, BAND)	CAI1661				
(2)	8	Button Unit (DISP, S.Rtrv, RDM, SW)	See Contrast tabel	21	Spring	XBL7005	
	9	Button(Reset)	CAI1676	22	Button Unit(CLOCK, LIST, OPEN)	CXC8936	
	10	Cover	CNS9294	23	Remote Control Unit	CXC9113	
				24	Cover	CZN5357	
	11	Lighting Conductor	CNV9883	25	IC(IC1931)	GP1UX31RK	B
	12	Connector(CN1961)	CKS5545				
	13	Connector(CN1801)	CKS5662	26	Cord Assy	XDP7004	
	14	Holder	CND4267	27	Holder	See Contrast tabel (2)	
				28	Screw	See Contrast tabel (2)	

(2) CONTRAST TABLE
 DEH-P600UB/XN/UC, DEH-P6000UB/XN/UC, DEH-P6050UB/XN/ES and DEH-P6050UB/XN/ES1
 are constructed the same except for the following:

Mark	No.	Description	DEH-P600UB/XN/UC	DEH-P6000UB/XN/UC	DEH-P6050UB/XN/ES DEH-P6050UB/XN/ES1
	4	Panel	CNS9342	CNS9319	CNS9319
	5	Detach Grille Assy	CXC8930	CXC8929	CXC8931
	8	Button Unit (DISP, S.Rtrv, RDM, SW)	CXC8880	CAI1672 (Button)	CXC9427
	19	Grille Unit	CXC8879	CXC8873	CXC8874
	20	Knob Unit	CXC8883	CXC8911	CXC8883
	27	Holder	Not used	CNV7619	Not used
	28	Screw	Not used	BMZ40P140FTC	Not used

1 2 3 4

9.3 EXTERIOR(2)

A

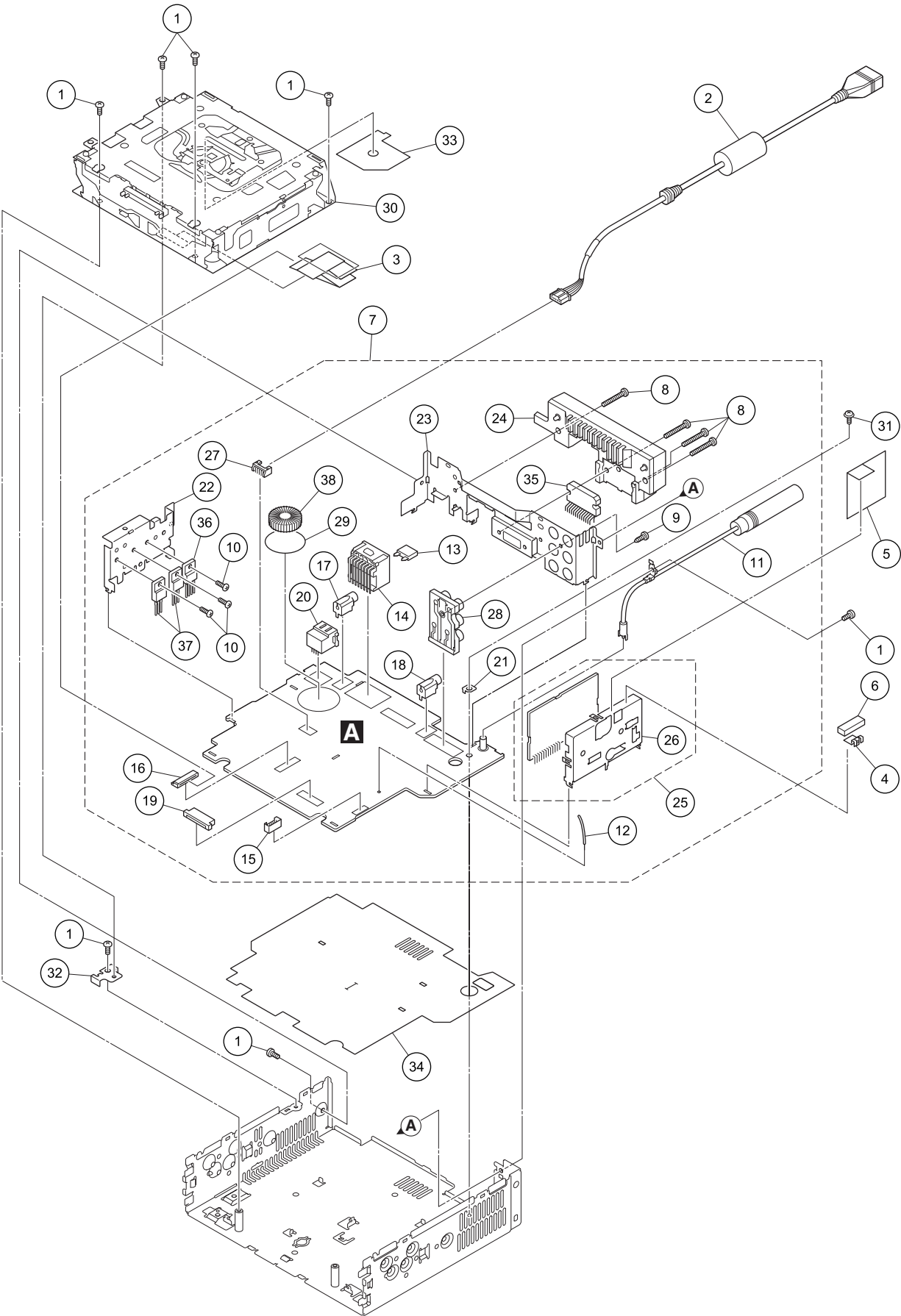
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Mark	No.	Description	Part No.	Mark	No.	Description	Part No.	
	1	Screw	BSZ26P060FTC		21	Holder(CN401)	CNC5399	A
	2	Cord Assy	CDE8351		22	Holder	CND3133	
	3	Cable	CDE8549		23	Holder	See Contrast table (2)	
	4	Earth Plate	CND2171		24	Heat Sink	CNR1940	
	5	Insulator	CNM8790		25	FM/AM Tuner Unit(Y401)	CWE2098	
	6	Cushion	CNM9126		26	Holder	CND4324	
	7	Tuner Amp Unit	See Contrast table (2)		27	Plug(CN781)	KM200NA5L	
	8	Screw	BMZ26P180FTC		28	Pin Jack(CN302)	XKB7001	
	9	Screw	BPZ26P070FTC		29	Insulator	XNM7031	
	10	Screw	BSZ26P060FTC		30	CD Mechanism Module(S10.5)	CXK5770	
	11	Antenna Cable(CN402)	CDH1336		31	Screw	ISS26P055FTC	B
	12	Clamper	CEF1048		32	Holder	XNC7014	
⚠	13	Fuse(10 A)	YEK5001		33	Insulator	XNM7106	
	14	Plug(CN981)	CKM1376		34	Insulator	XNM7114	
	15	Plug(CN871)	CKS-786		35	IC(IC351)	PAL007C	
	16	Connector(CN701)	CKS3833		36	IC(IC911)	NJM2388F84	
	17	Connector(CN151)	See Contrast table (2)		37	Transistor(Q751,Q901)	2SD2396	
	18	Connector(CN181)	CKS4124		38	Choke Coil(L981)	CTH1280	
	19	Connector(CN801)	CKS4811					C
	20	Connector(CN101)	CKS5271					

(2) CONTRAST TABLE
 DEH-P600UB/XN/UC, DEH-P6000UB/XN/UC, DEH-P6050UB/XN/ES and DEH-P6050UB/XN/ES1
 are constructed the same except for the following:

Mark	No.	Description	DEH-P600UB/XN/UC	DEH-P6000UB/XN/UC	DEH-P6050UB/XN/ES DEH-P6050UB/XN/ES1
	7	Tuner Amp Unit	CWN3149	CWN3148	CWE3150
	17	Connector(CN151)	CKS4124	CKS4124	Not used
	23	Holder	CND4255	CND4255	CND4256

9.4 DRIVE UNIT

A

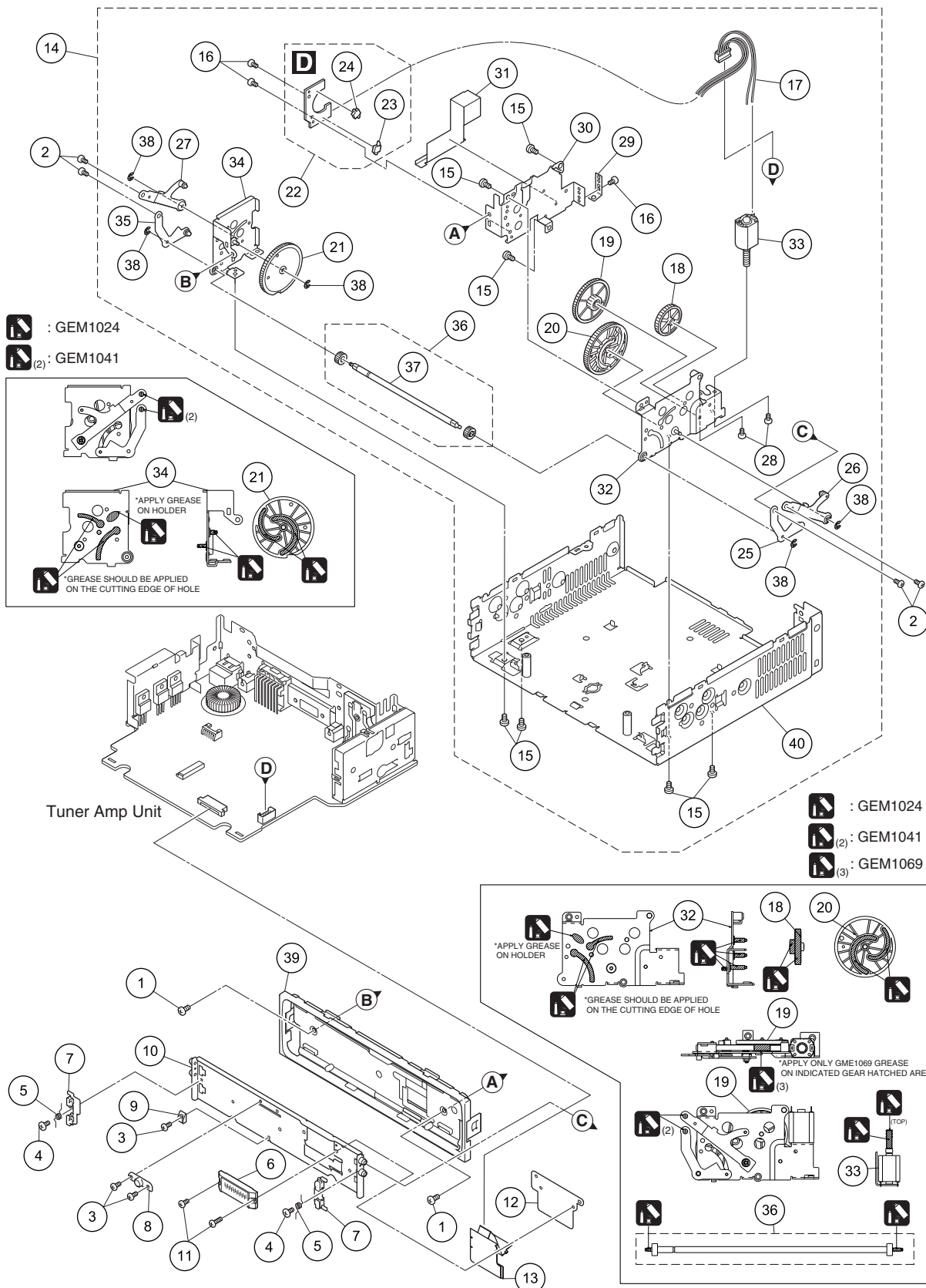
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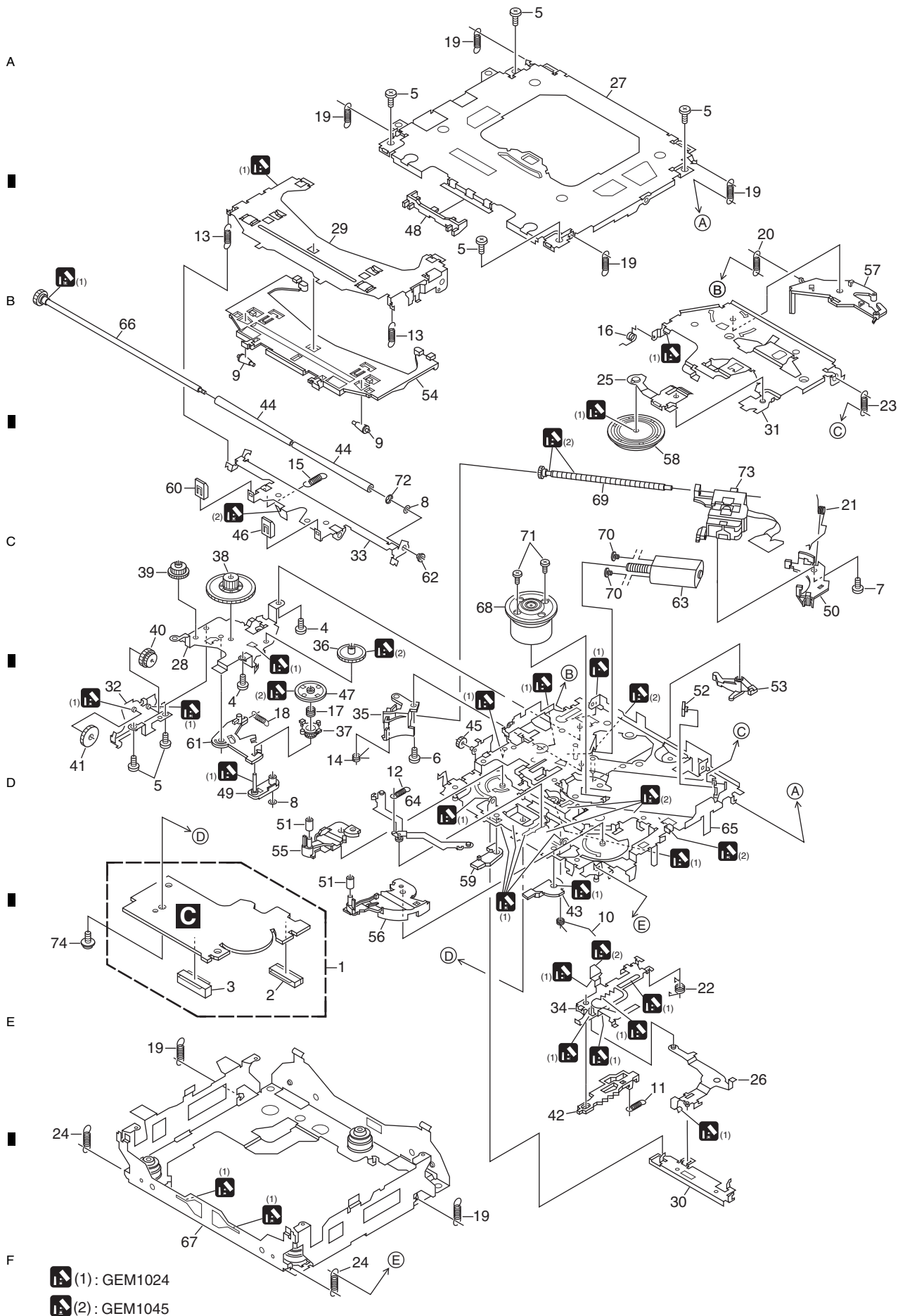
F



DRIVE UNIT SECTION PARTS LIST

<u>Mark No.</u>	<u>Description</u>	<u>Part No.</u>	
1	Screw(M2.6 x 4)	CBA1828	
2	Screw(M2 x 2.5)	CBA1924	A
3	Screw(M2 x 2)	CBA1871	
4	Screw(M2 x 1.9)	CBA1935	
5	Spring	CBH2530	
6	Connector	CKS5273	
7	Arm	CNV6962	
8	Guide	CNV6967	
9	Guide	CNV8048	
10	Case Unit	CXC6483	
11	Screw(M2 x 3.5)	XBA7002	B
12	Holder	XNC7019	
13	Flexible PCB	XNP7026	
14	Drive Unit	CXC8854	
15	Screw	BMZ26P040FTC	
16	Screw(M2 x 2)	CBA1871	
17	Cord	CDE7392	
18	Gear	CNV7752	
19	Gear	CNV7753	
20	Gear	CNV7754	C
21	Gear	CNV7755	
22	Switch Unit	CWS1389	
23	Switch	CSN1051	
24	Spring Switch	CSN1052	
25	Arm Unit	CXC2199	
26	Arm Unit	CXC6623	
27	Arm Unit	CXC6624	
28	Screw	JFZ20P020FTC	
29	Spring	XBL7003	D
30	Holder	XNC7017	
31	Insulator	XNM7119	
32	Holder Unit	XXA7399	
33	Motor Unit	XXA7400	
34	Holder Unit	XXA7401	
35	Arm Unit	XXA7403	
36	Gear Unit	XXA7424	
37	Shaft	XLA7001	
38	Washer	YE15FTC	E
39	Panel Unit	CXC8925	
* 40	Chassis Unit	CXC8855	

9.5 CD MECHANISM MODULE



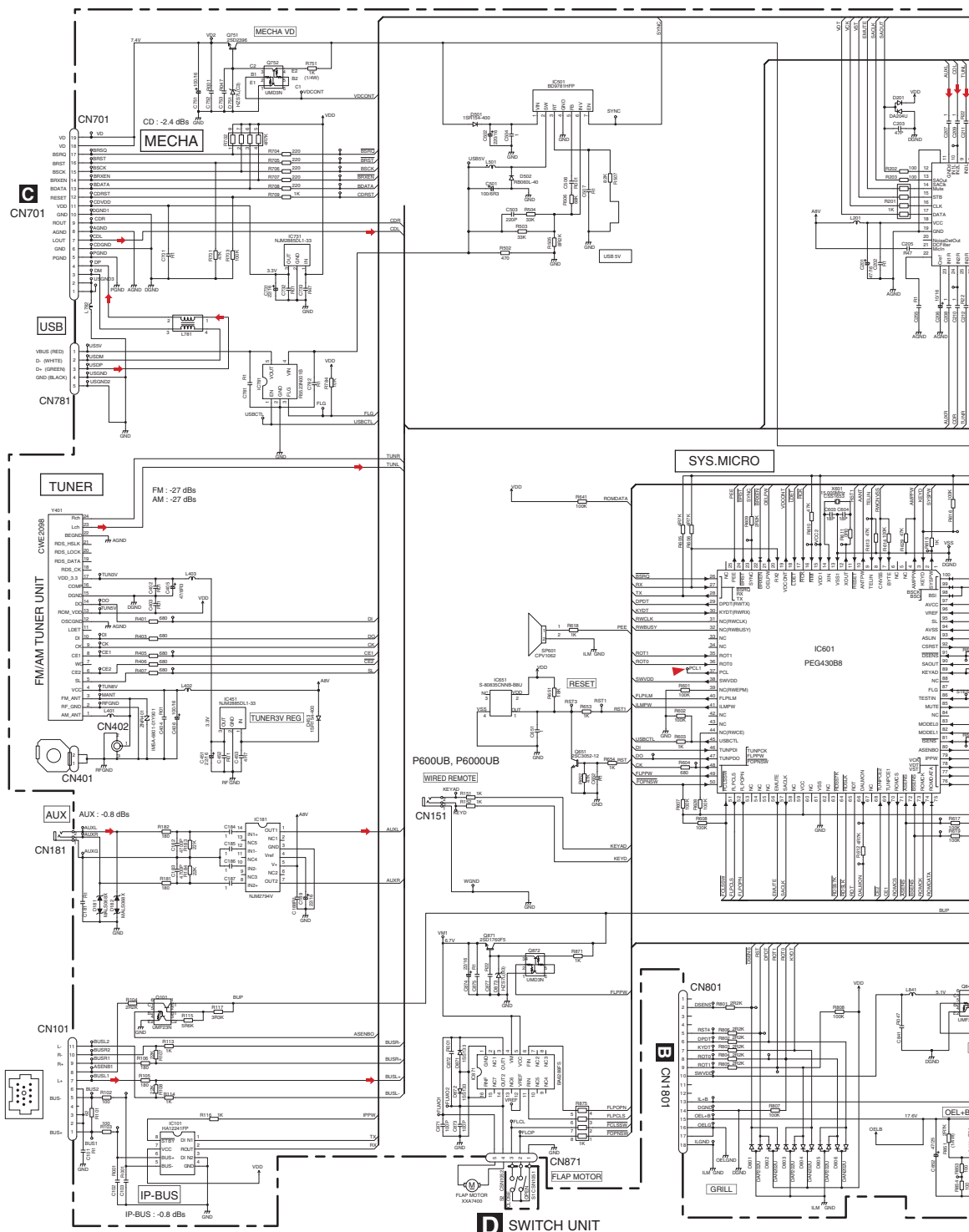
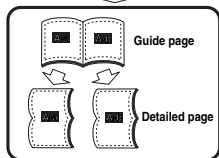
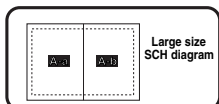
<u>Mark No.</u>	<u>Description</u>	<u>Part No.</u>	<u>Mark No.</u>	<u>Description</u>	<u>Part No.</u>	
1	CD Core Unit(S10.5COMP2-iPod)	CWX3526	50	Rack	CNV8342	
2	Connector(CN101)	CKS4182				
3	Connector(CN701)	CKS4186	51	Roller	CNV8343	A
4	Screw	BMZ20P025FTC	52	Holder	CNV8344	
5	Screw	BSZ20P040FTC	53	Arm	CNV8345	
			54	Guide	CNV9498	
6	Screw(M2 x 3)	CBA1511	55	Arm	CNV8348	
7	Screw(M2 x 4)	CBA1835				
8	Washer	CBF1038	56	Arm	CNV8349	
9	Roller	CNV9499	57	Arm	CNV8350	
10	Spring	CBH2609	58	Clamper	CNV8365	
			59	Arm	CNV8386	
11	Spring	CBH2612	60	Guide	CNV8396	B
12	Spring	CBH2614				
13	Spring	CBH2616	61	Arm	CNV8413	
14	Spring	CBH2617	62	Collar	CNV8938	
15	Spring	CBH2620	63	Motor Unit(M2)	CXC4026	
			64	Arm Unit	CXC4027	
16	Spring	CBH2855	65	Chassis Unit	CXC4028	
17	Spring	CBH2937				
18	Spring	CBH2735	66	Gear Unit	CXC4029	
19	Spring	CBH2854	67	Frame Unit	CXC4031	
20	Spring	CBH2642	68	Motor Unit(M1)	CXC7134	
			69	Screw Unit	CXC6359	C
21	Spring	CBH2856	70	Screw	JFZ20P020FTC	
22	Spring	CBH2857				
23	Spring	CBH2860	71	Screw	JGZ17P022FTC	
24	Spring	CBH2861	72	Washer	YE20FTC	
25	Spring	CBL1686	73	Pickup Unit(P10.5)(Service)	CXX1942	
			74	Screw	IMS26P030FTC	
26	Arm	CND1909				
27	Frame	CND2582				
28	Bracket	CND2583				
29	Arm	CND3831				
30	Lever	CND2585				D
31	Arm	CND2586				
32	Bracket	CND2587				
33	Arm	CND2588				
34	Lever	CND2589				
35	Holder	CNV7201				
36	Gear	CNV7207				
37	Gear	CNV7208				
38	Gear	CNV7209				
39	Gear	CNV7210				E
40	Gear	CNV7211				
41	Gear	CNV7212				
42	Rack	CNV7214				
43	Arm	CNV7216				
44	Roller	CNV7218				
45	Gear	CNV7219				
46	Guide	CNV7361				
47	Gear	CNV7595				F
48	Guide	CNV7799				
49	Arm	CNV7805				

10. SCHEMATIC DIAGRAM

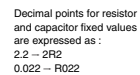
10.1 OVERALL CONNECTION DIAGRAM(GUIDE PAGE)

Note: When ordering service parts, be sure to refer to "EXPLODED VIEWS AND PARTS LIST" or "ELECTRICAL PARTS LIST".

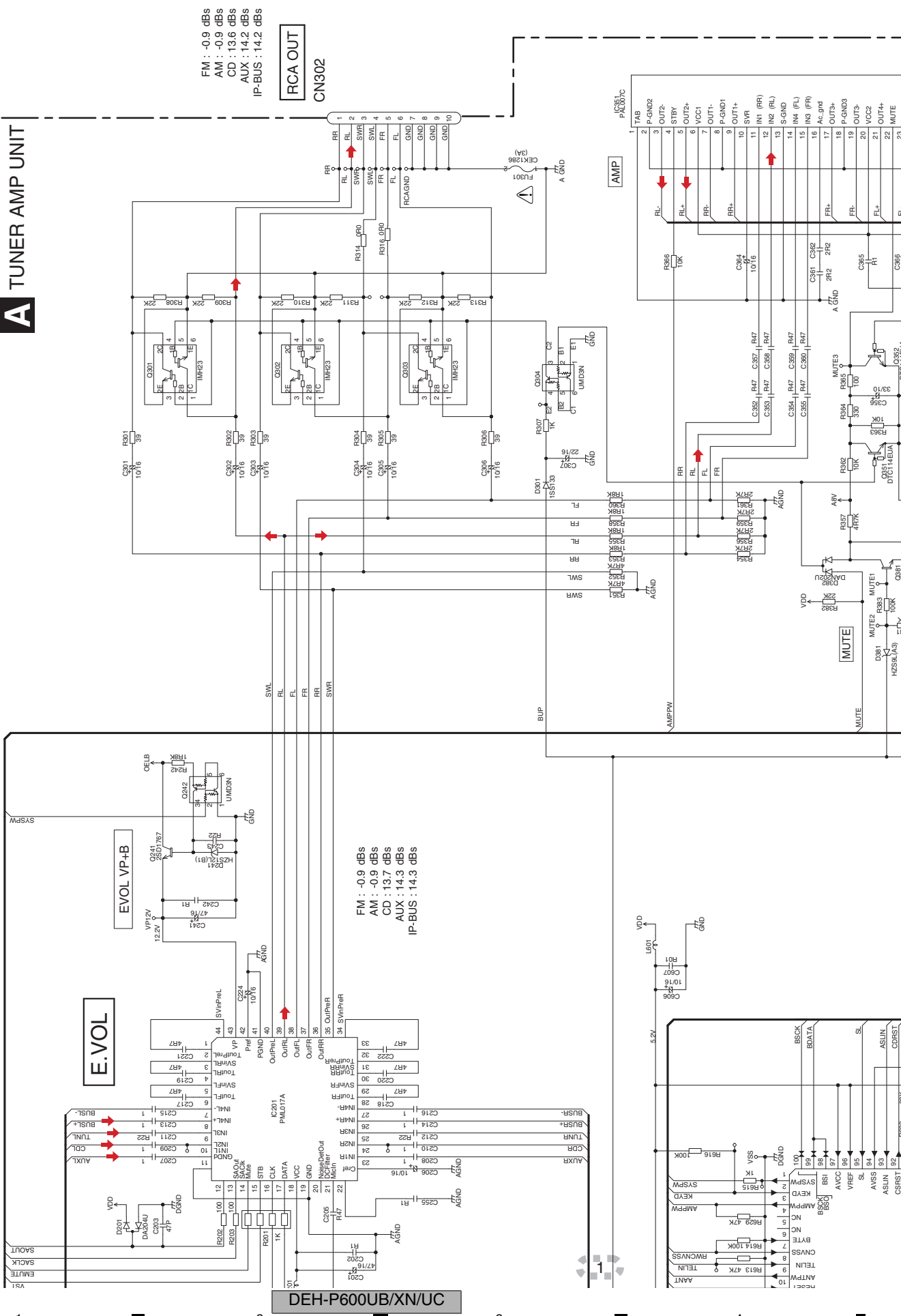
A-a

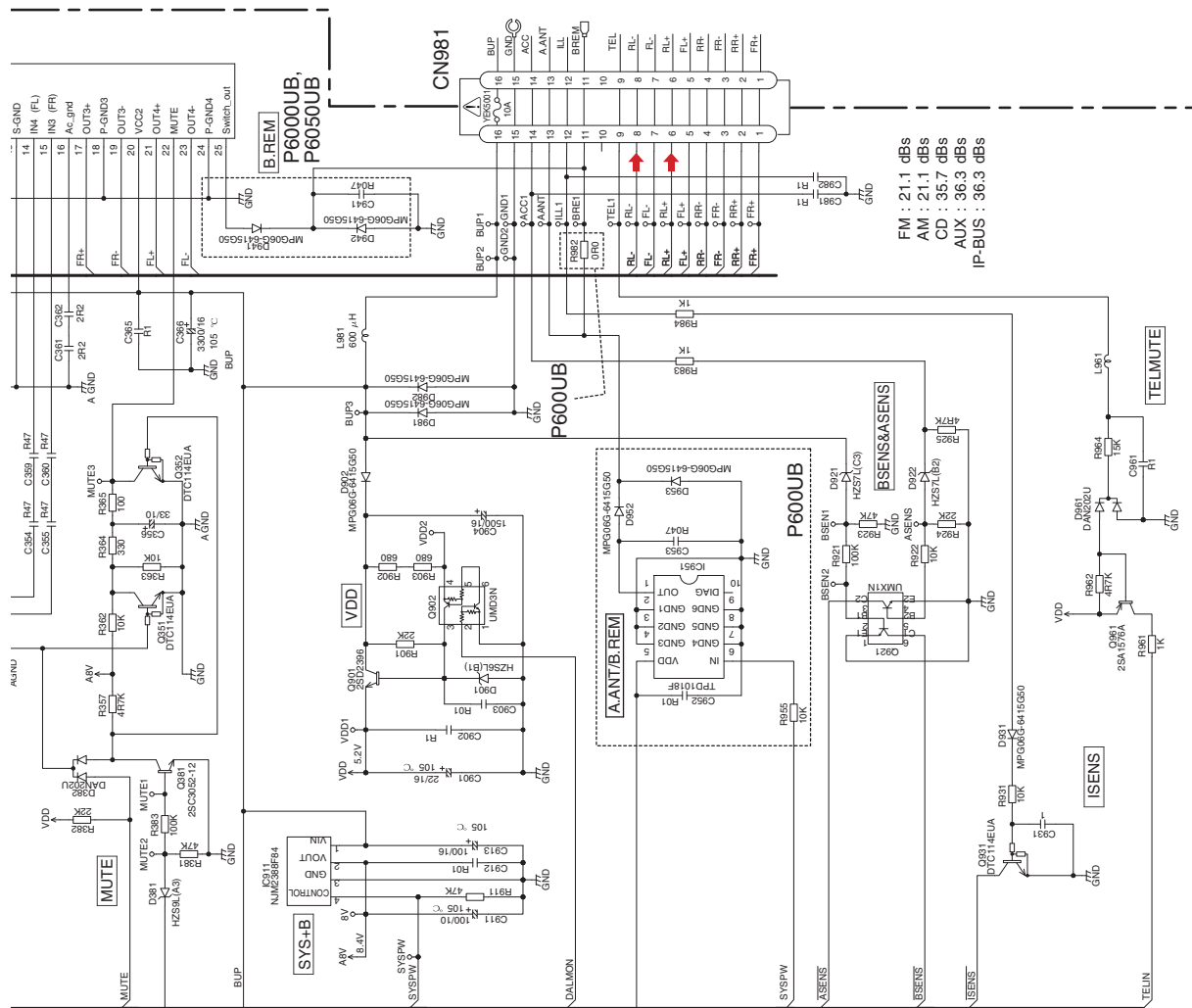


The mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.



A-a	A-b
-----	-----

A-b



Decimal points for resistor and capacitor fixed values are expressed as :

2.2 – 2R2
0.022 – R022

: :
 Symbol indicates a resistor.
 No differentiation is made between chip resistors and discrete resistors.
 Symbol indicates a capacitor.
 No differentiation is made between chip capacitors and discrete capacitors.

NOTE:

□- Symbol indicates a resistor.

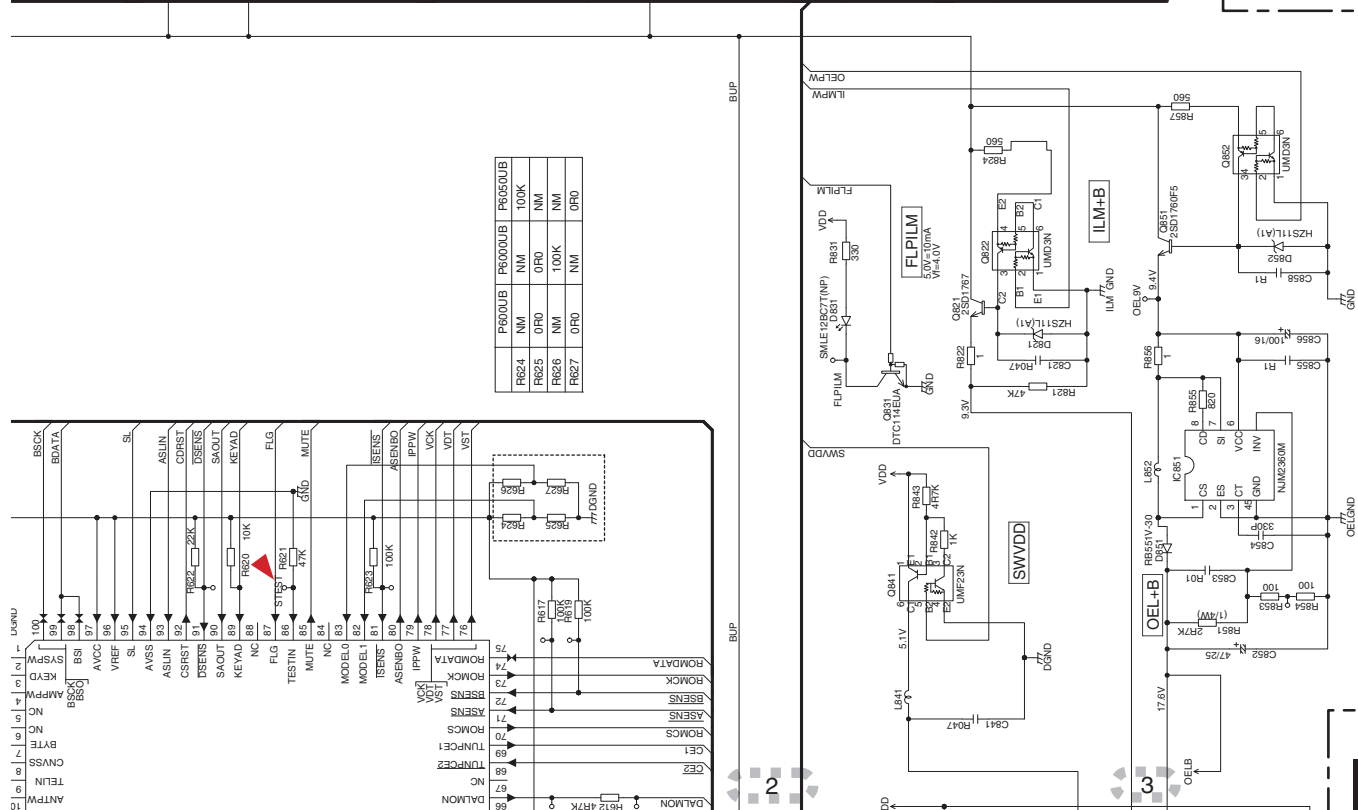
No differentiation is made between chip resistors and discrete resistors.

—H— Symbol indicates a capacitor.

No differentiation is made between chip capacitors and discrete capacitors.

A-a	A-b
<p>1. $\frac{1}{2}$ of the population</p> <p>2. $\frac{1}{4}$ of the population</p> <p>3. $\frac{1}{8}$ of the population</p> <p>4. $\frac{1}{16}$ of the population</p> <p>5. $\frac{1}{32}$ of the population</p> <p>6. $\frac{1}{64}$ of the population</p> <p>7. $\frac{1}{128}$ of the population</p> <p>8. $\frac{1}{256}$ of the population</p> <p>9. $\frac{1}{512}$ of the population</p> <p>10. $\frac{1}{1024}$ of the population</p> <p>11. $\frac{1}{2048}$ of the population</p> <p>12. $\frac{1}{4096}$ of the population</p> <p>13. $\frac{1}{8192}$ of the population</p> <p>14. $\frac{1}{16384}$ of the population</p> <p>15. $\frac{1}{32768}$ of the population</p> <p>16. $\frac{1}{65536}$ of the population</p> <p>17. $\frac{1}{131072}$ of the population</p> <p>18. $\frac{1}{262144}$ of the population</p> <p>19. $\frac{1}{524288}$ of the population</p> <p>20. $\frac{1}{1048576}$ of the population</p> <p>21. $\frac{1}{2097152}$ of the population</p> <p>22. $\frac{1}{4194304}$ of the population</p> <p>23. $\frac{1}{8388608}$ of the population</p> <p>24. $\frac{1}{16777216}$ of the population</p> <p>25. $\frac{1}{33554432}$ of the population</p> <p>26. $\frac{1}{67108864}$ of the population</p> <p>27. $\frac{1}{134217728}$ of the population</p> <p>28. $\frac{1}{268435456}$ of the population</p> <p>29. $\frac{1}{536870912}$ of the population</p> <p>30. $\frac{1}{1073741824}$ of the population</p> <p>31. $\frac{1}{2147483648}$ of the population</p> <p>32. $\frac{1}{4294967296}$ of the population</p> <p>33. $\frac{1}{8589934592}$ of the population</p> <p>34. $\frac{1}{17179869184}$ of the population</p> <p>35. $\frac{1}{34359738368}$ of the population</p> <p>36. $\frac{1}{68719476736}$ of the population</p> <p>37. $\frac{1}{137438953472}$ of the population</p> <p>38. $\frac{1}{274877906944}$ of the population</p> <p>39. $\frac{1}{549755813888}$ of the population</p> <p>40. $\frac{1}{1099511627776}$ of the population</p> <p>41. $\frac{1}{2199023255552}$ of the population</p> <p>42. $\frac{1}{4398046511104}$ of the population</p> <p>43. $\frac{1}{8796093022208}$ of the population</p> <p>44. $\frac{1}{17592186044416}$ of the population</p> <p>45. $\frac{1}{35184372088832}$ of the population</p> <p>46. $\frac{1}{70368744177664}$ of the population</p> <p>47. $\frac{1}{140737488355328}$ of the population</p> <p>48. $\frac{1}{281474976710656}$ of the population</p> <p>49. $\frac{1}{562949953421312}$ of the population</p> <p>50. $\frac{1}{1125899906842624}$ of the population</p> <p>51. $\frac{1}{2251799813685248}$ of the population</p> <p>52. $\frac{1}{4503599627370496}$ of the population</p> <p>53. $\frac{1}{9007199254740992}$ of the population</p> <p>54. $\frac{1}{18014398509481984}$ of the population</p> <p>55. $\frac{1}{36028797018963968}$ of the population</p> <p>56. $\frac{1}{72057594037927936}$ of the population</p> <p>57. $\frac{1}{144115188075855872}$ of the population</p> <p>58. $\frac{1}{288230376151711744}$ of the population</p> <p>59. $\frac{1}{576460752303423488}$ of the population</p> <p>60. $\frac{1}{1152921504606846976}$ of the population</p> <p>61. $\frac{1}{2305843009213693952}$ of the population</p> <p>62. $\frac{1}{4611686018427387904}$ of the population</p> <p>63. $\frac{1}{9223372036854775808}$ of the population</p> <p>64. $\frac{1}{18446744073709551616}$ of the population</p> <p>65. $\frac{1}{36893488147419103232}$ of the population</p> <p>66. $\frac{1}{73786976294838206464}$ of the population</p> <p>67. $\frac{1}{147573952589676412928}$ of the population</p> <p>68. $\frac{1}{295147905179352825856}$ of the population</p> <p>69. $\frac{1}{590295810358705651712}$ of the population</p> <p>70. $\frac{1}{1180591620717411303424}$ of the population</p> <p>71. $\frac{1}{2361183241434822606848}$ of the population</p> <p>72. $\frac{1}{4722366482869645213696}$ of the population</p> <p>73. $\frac{1}{9444732965739290427392}$ of the population</p> <p>74. $\frac{1}{18889465931478580854784}$ of the population</p> <p>75. $\frac{1}{37778931862957161709568}$ of the population</p> <p>76. $\frac{1}{75557863725914323419136}$ of the population</p> <p>77. $\frac{1}{151115727451828646838272}$ of the population</p> <p>78. $\frac{1}{302231454903657293676544}$ of the population</p> <p>79. $\frac{1}{604462909807314587353088}$ of the population</p> <p>80. $\frac{1}{1208925819614629174706176}$ of the population</p> <p>81. $\frac{1}{2417851639229258349412352}$ of the population</p> <p>82. $\frac{1}{4835703278458516698824704}$ of the population</p> <p>83. $\frac{1}{9671406556917033397649408}$ of the population</p> <p>84. $\frac{1}{19342813113834066795298816}$ of the population</p> <p>85. $\frac{1}{38685626227668133590597632}$ of the population</p> <p>86. $\frac{1}{77371252455336267181195264}$ of the population</p> <p>87. $\frac{1}{154742504910672534362390528}$ of the population</p> <p>88. $\frac{1}{309485009821345068724781056}$ of the population</p> <p>89. $\frac{1}{618970019642690137449562112}$ of the population</p> <p>90. $\frac{1}{1237940039285380274899124224}$ of the population</p> <p>91. $\frac{1}{2475880078570760549798248448}$ of the population</p> <p>92. $\frac{1}{4951760157141521099596496896}$ of the population</p> <p>93. $\frac{1}{9903520314283042199192993792}$ of the population</p> <p>94. $\frac{1}{19807040628566084398385987584}$ of the population</p> <p>95. $\frac{1}{39614081257132168796771975168}$ of the population</p> <p>96. $\frac{1}{79228162514264337593543950336}$ of the population</p> <p>97. $\frac{1}{158456325028528675187087900672}$ of the population</p> <p>98. $\frac{1}{316912650057057350374175801344}$ of the population</p> <p>99. $\frac{1}{633825300114114700748351602688}$ of the population</p> <p>100. $\frac{1}{1267650600228229401496703205376}$ of the population</p>	

	P600UB	P6000UB	P6050UB
R624	NM	NM	100K
R625	0R0	0R0	NM
R626	NM	100K	NM
R627	0R0	NM	0R0

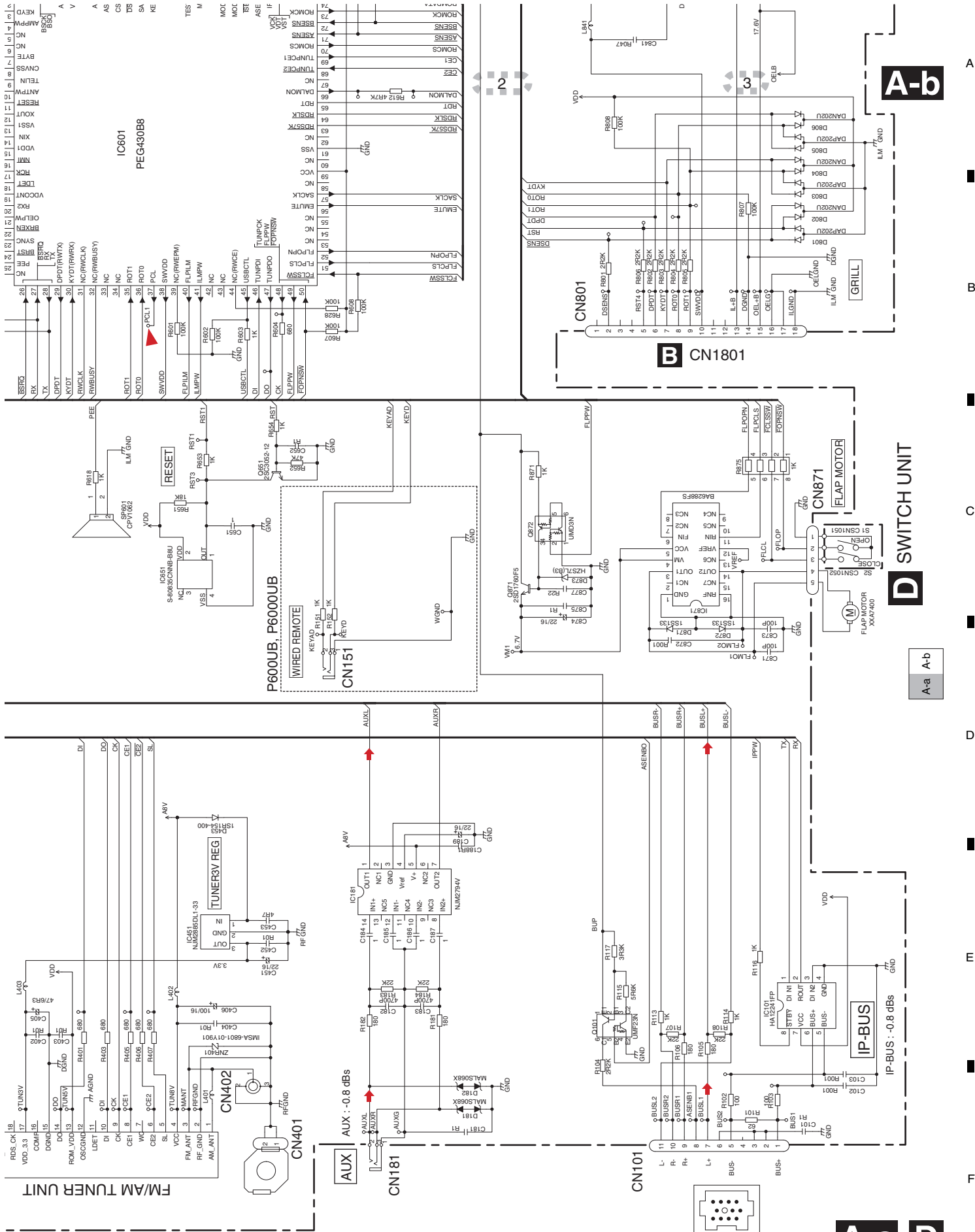
**A-b**

F

A-a A-b

DEH-P600UB/XN/UC

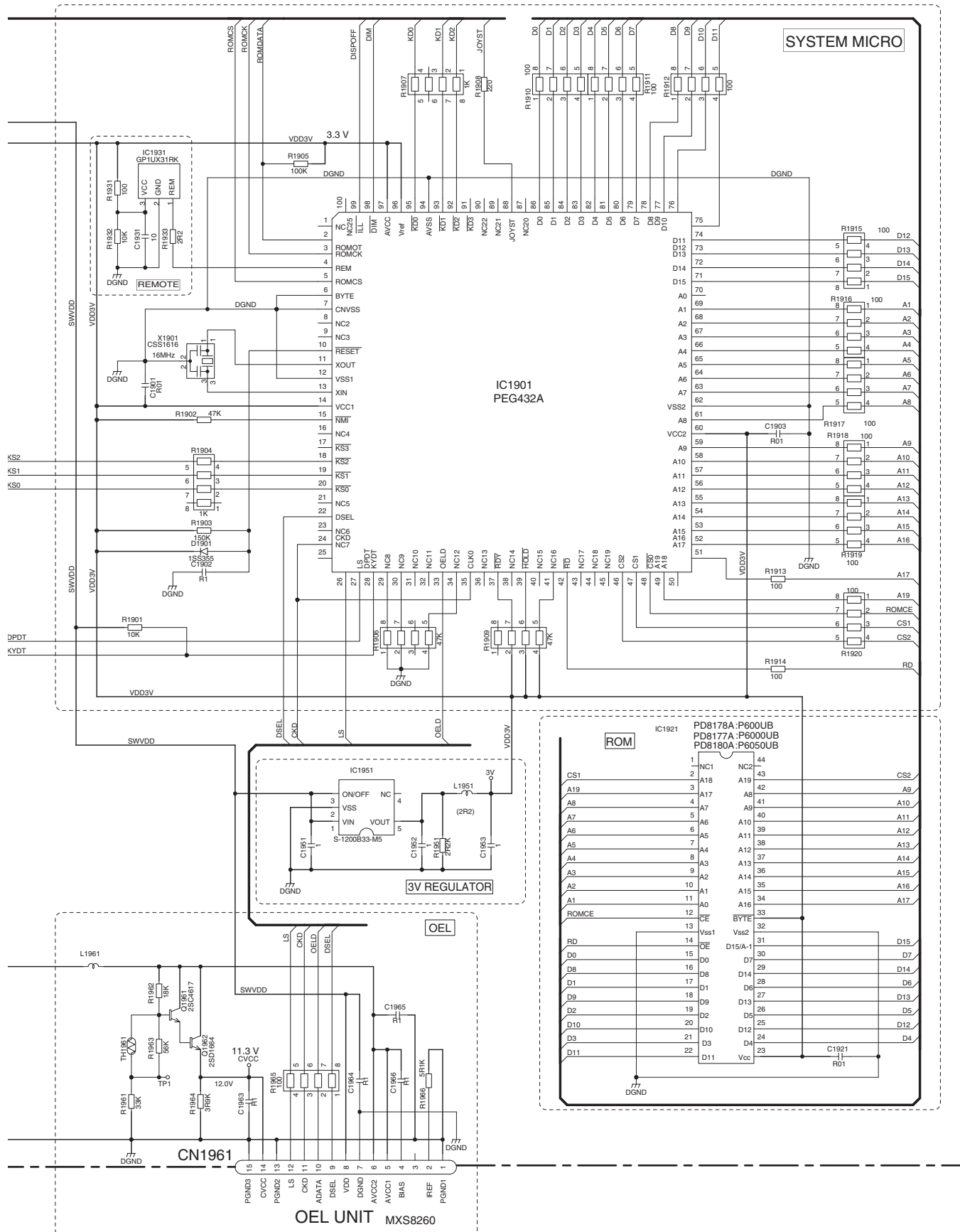




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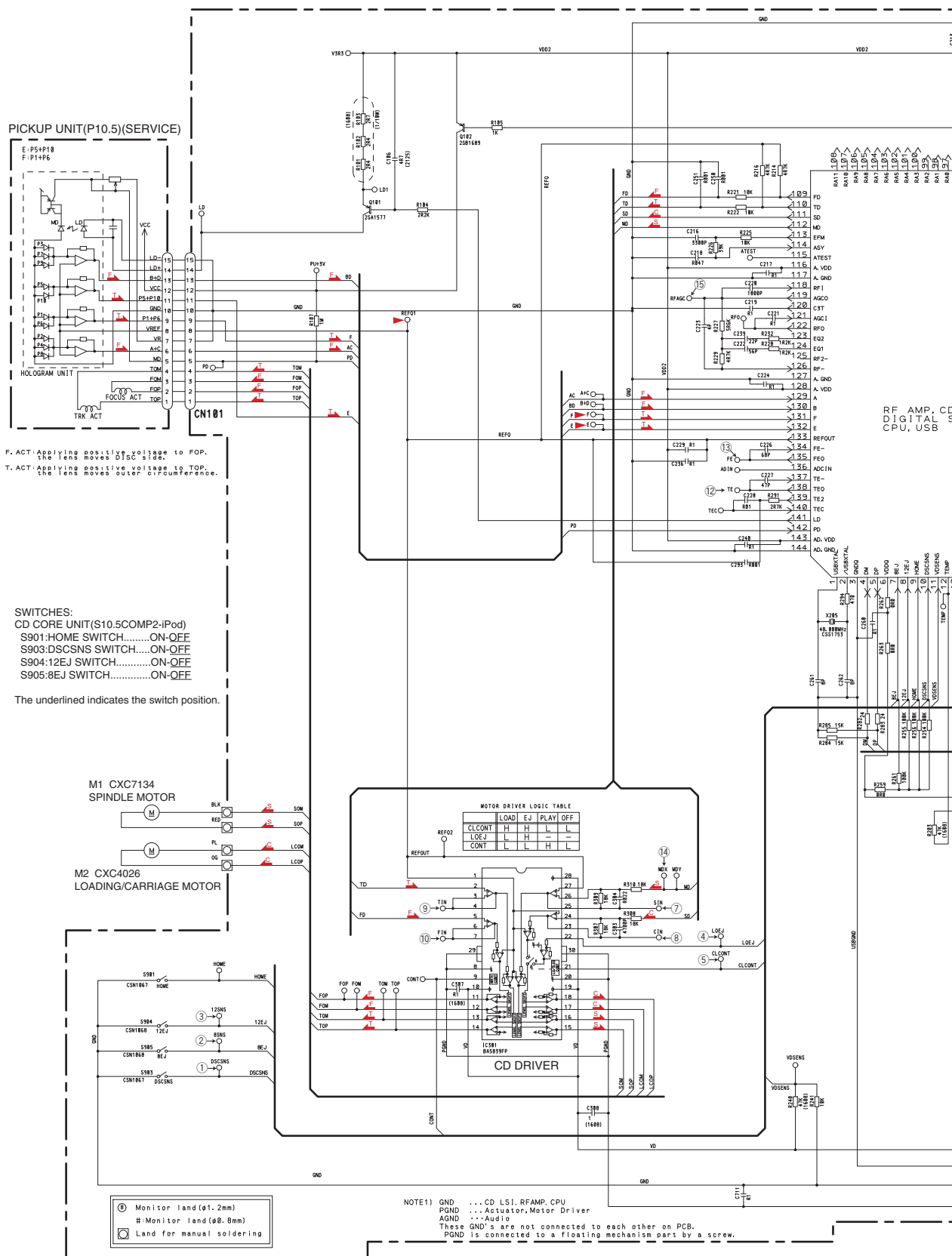


B KEYBOARD UNIT



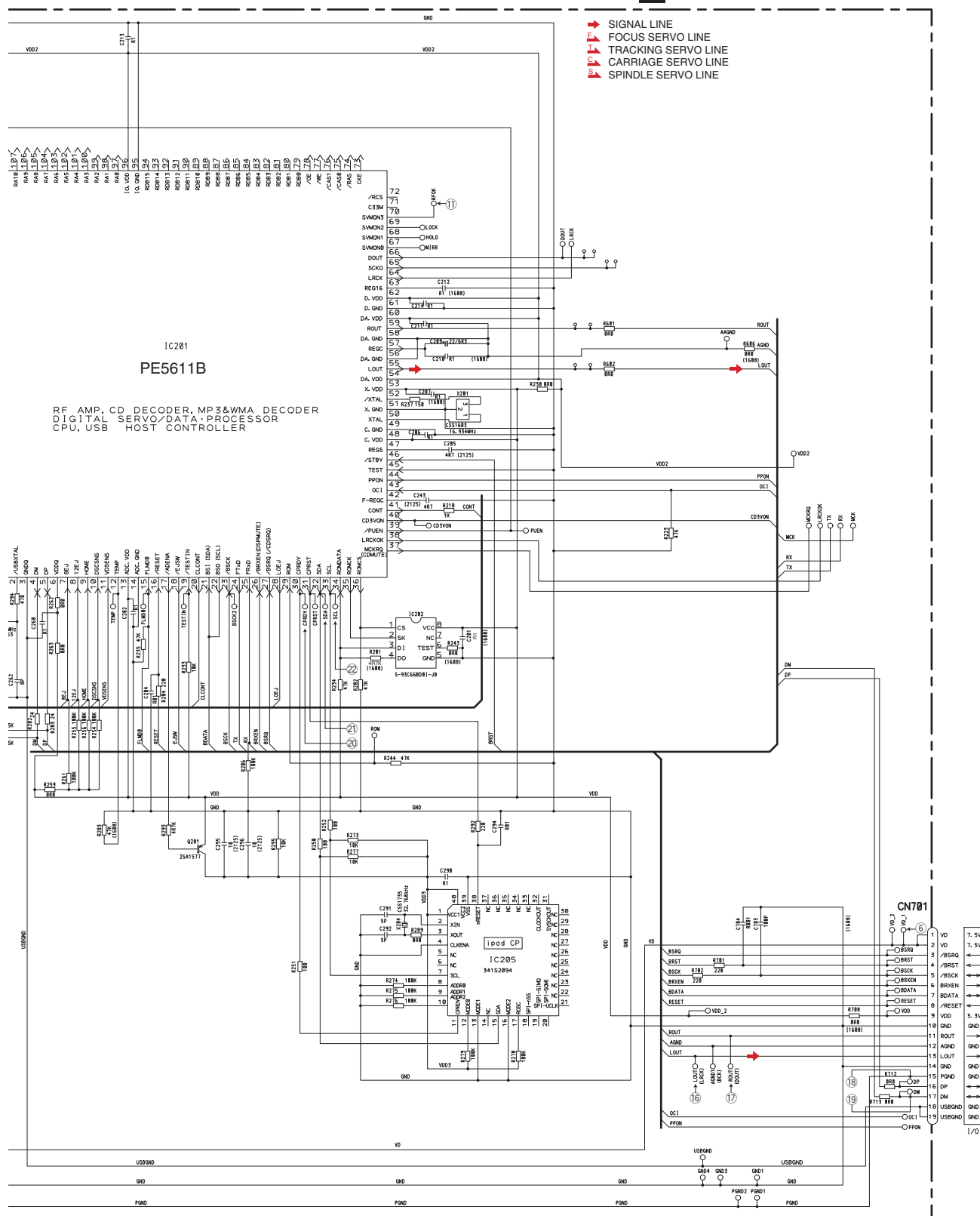
10.3 CD MECHANISM MODULE(GUIDE PAGE)

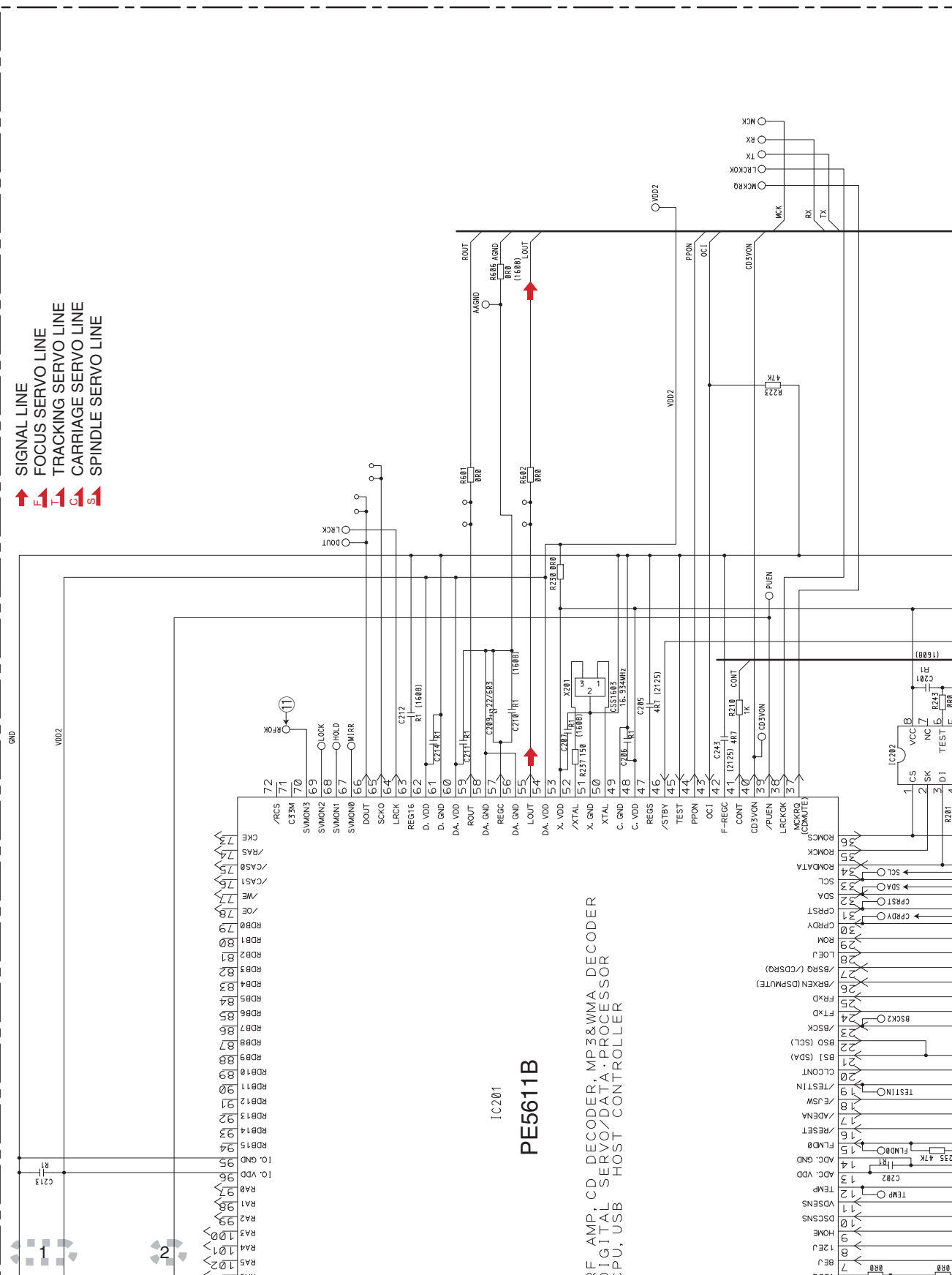
C-a



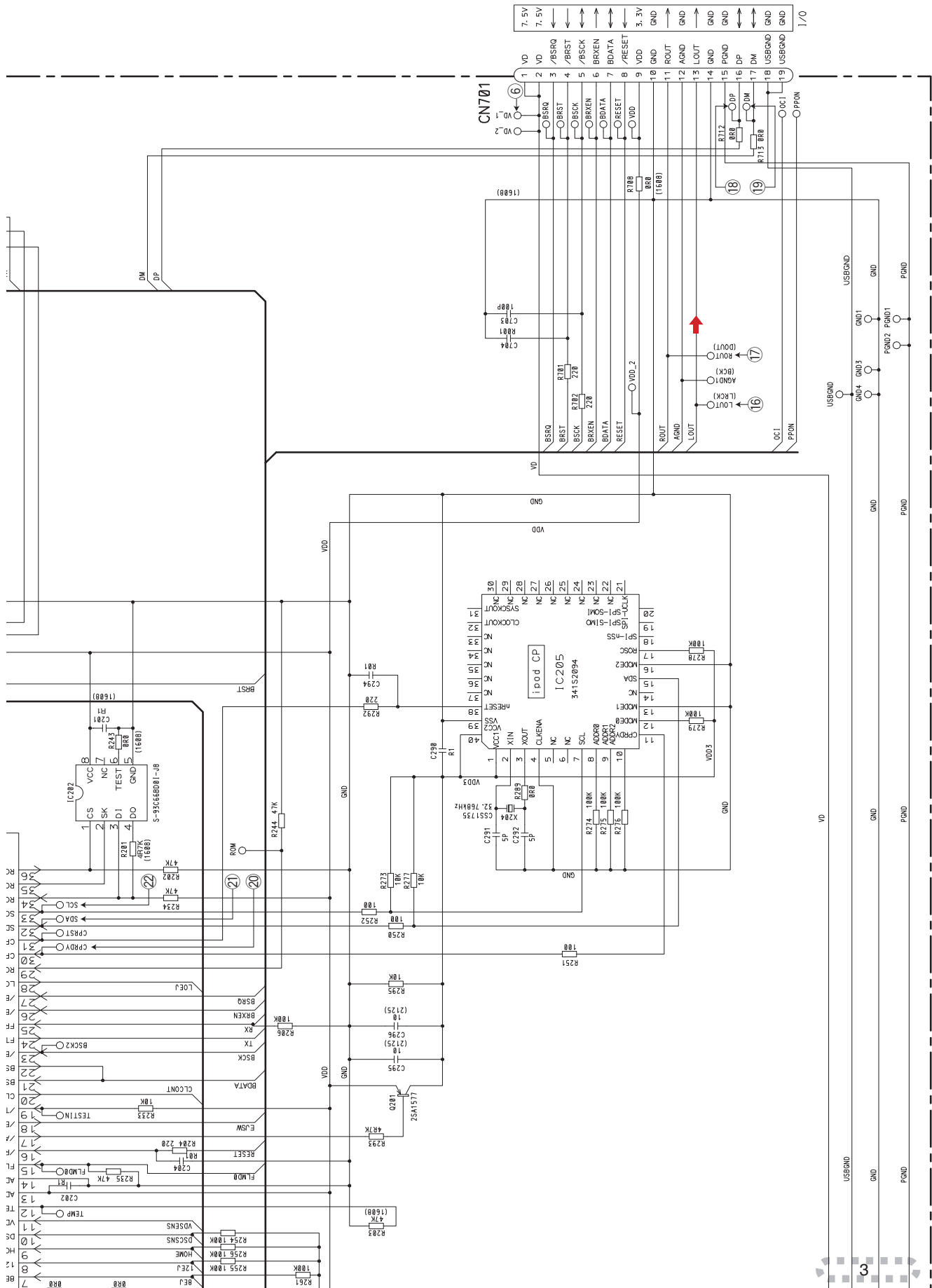
C-b

C CD CORE UNIT(S10.5COMP2-iPod)





A CN701



DEH-P600UB/XN/UC

A

B

C

D

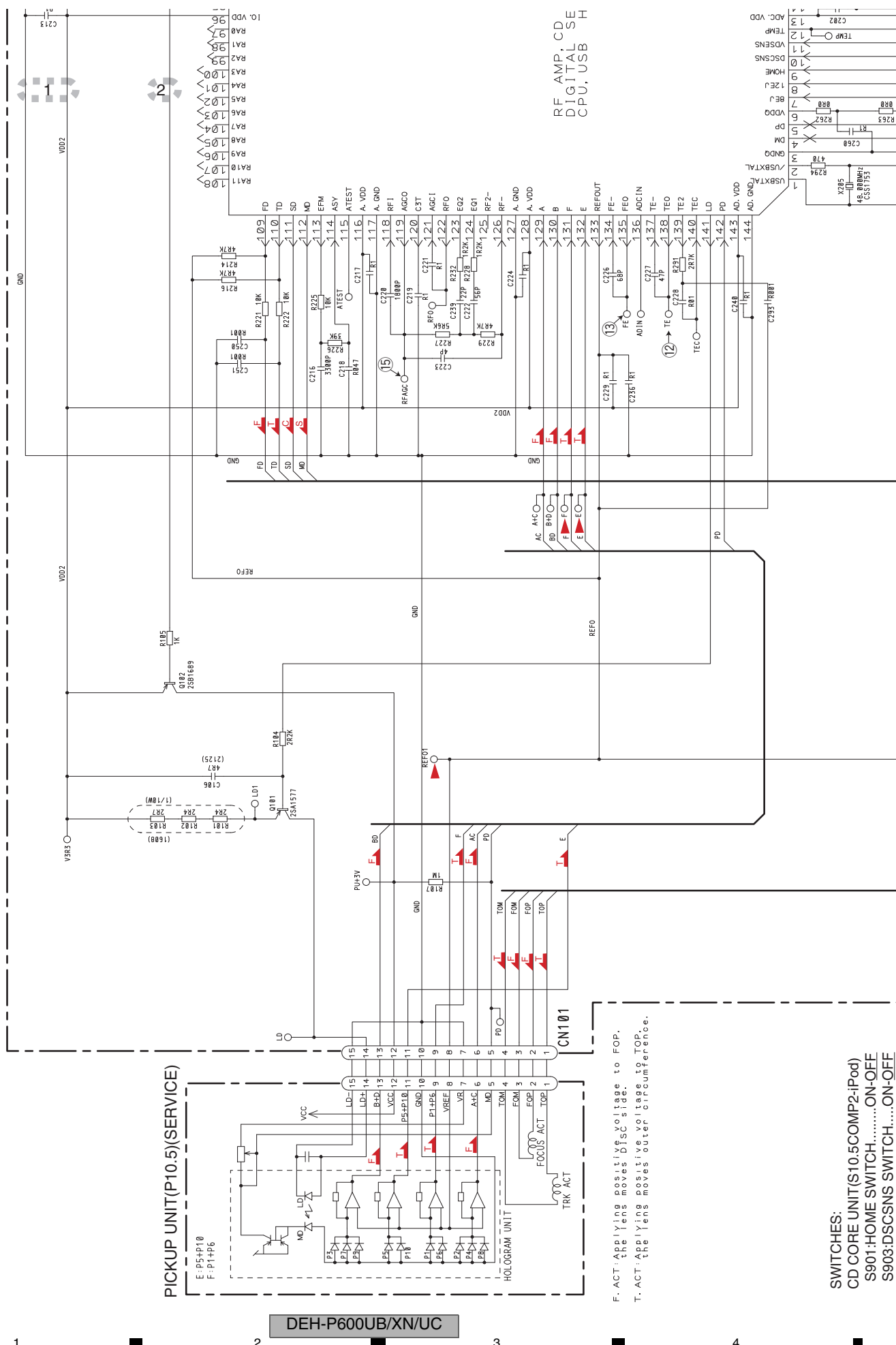
E

F

C-b

C-a C-b

C-a



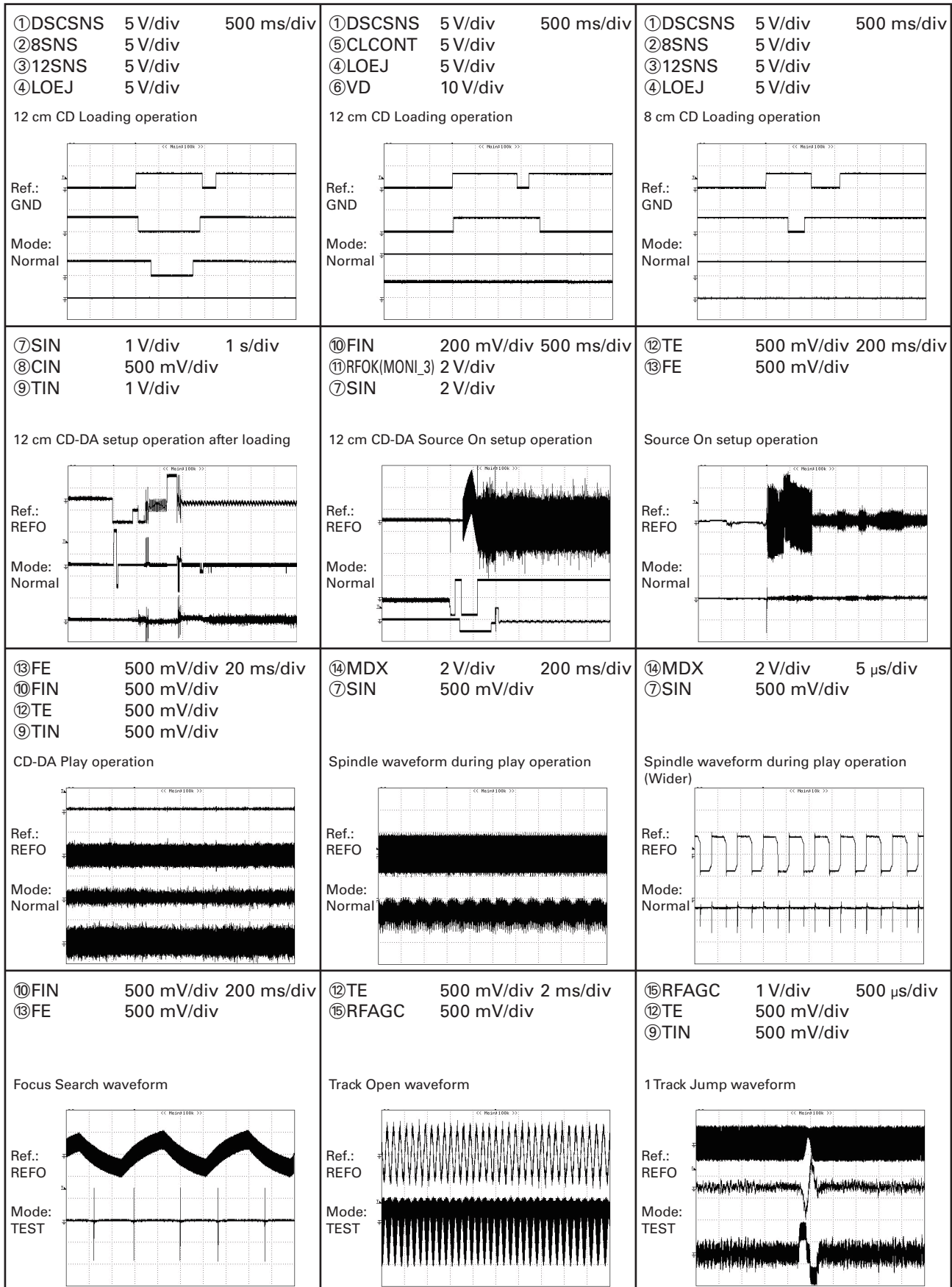
F. ACT: Applying positive voltage to FOP, the lens moves DISC side.

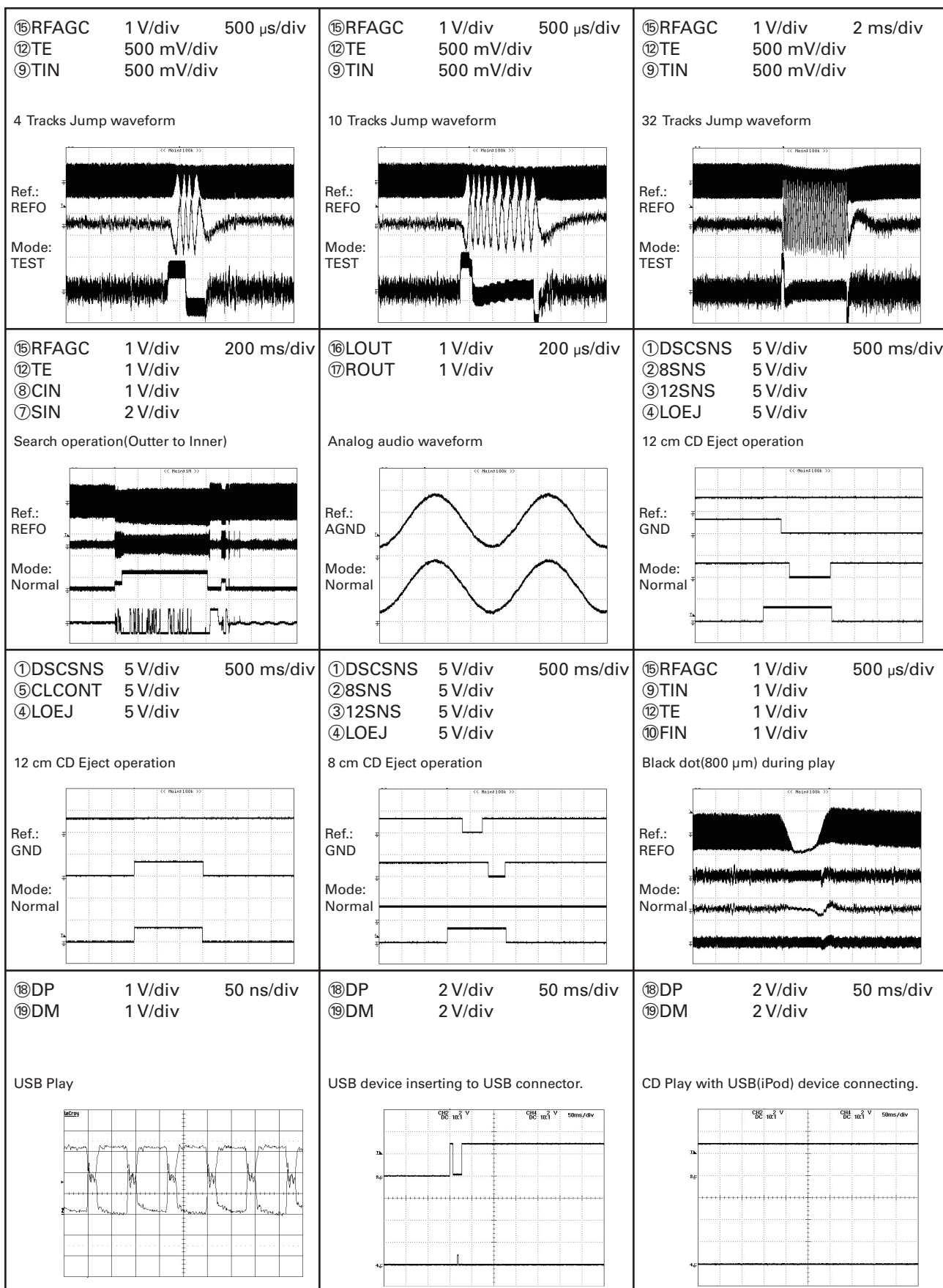
58

10.4 WAVEFORMS

CD CORE UNIT

Note : 1. The encircled numbers denote measuring points in the circuit diagram.
2. Reference voltage REFO1(1.65 V)

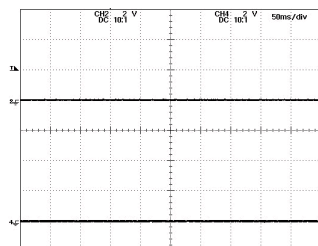




A

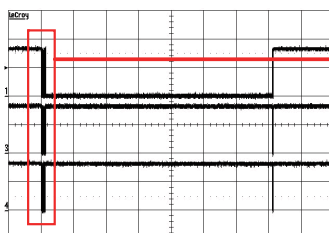
⑮ DP 2 V/div 50 ms/div
⑮ DM 2 V/div

ACC OFF with USB(iPod) device connecting.



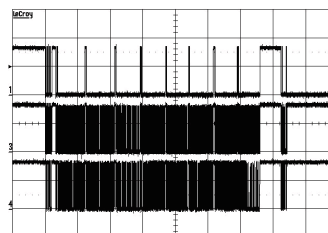
⑳ CPRDY 2 V/div 10 s/div
㉑ SDA 2 V/div
㉒ SCL 2 V/div

iPod Authentication Operation



⑳ CPRDY 2 V/div
㉑ SDA 2 V/div
㉒ SCL 2 V/div

iPod Authentication Operation(zoom until 2 s)



B

C

D

E

F

■

5

■

6

■

7

■

8

■

A

■

B

■

C

■

D

■

E

■

F

■

5

■

6

■

7

■

8

■

11. PCB CONNECTION DIAGRAM

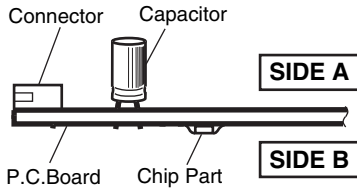
11.1 TUNER AMP UNIT

NOTE FOR PCB DIAGRAMS

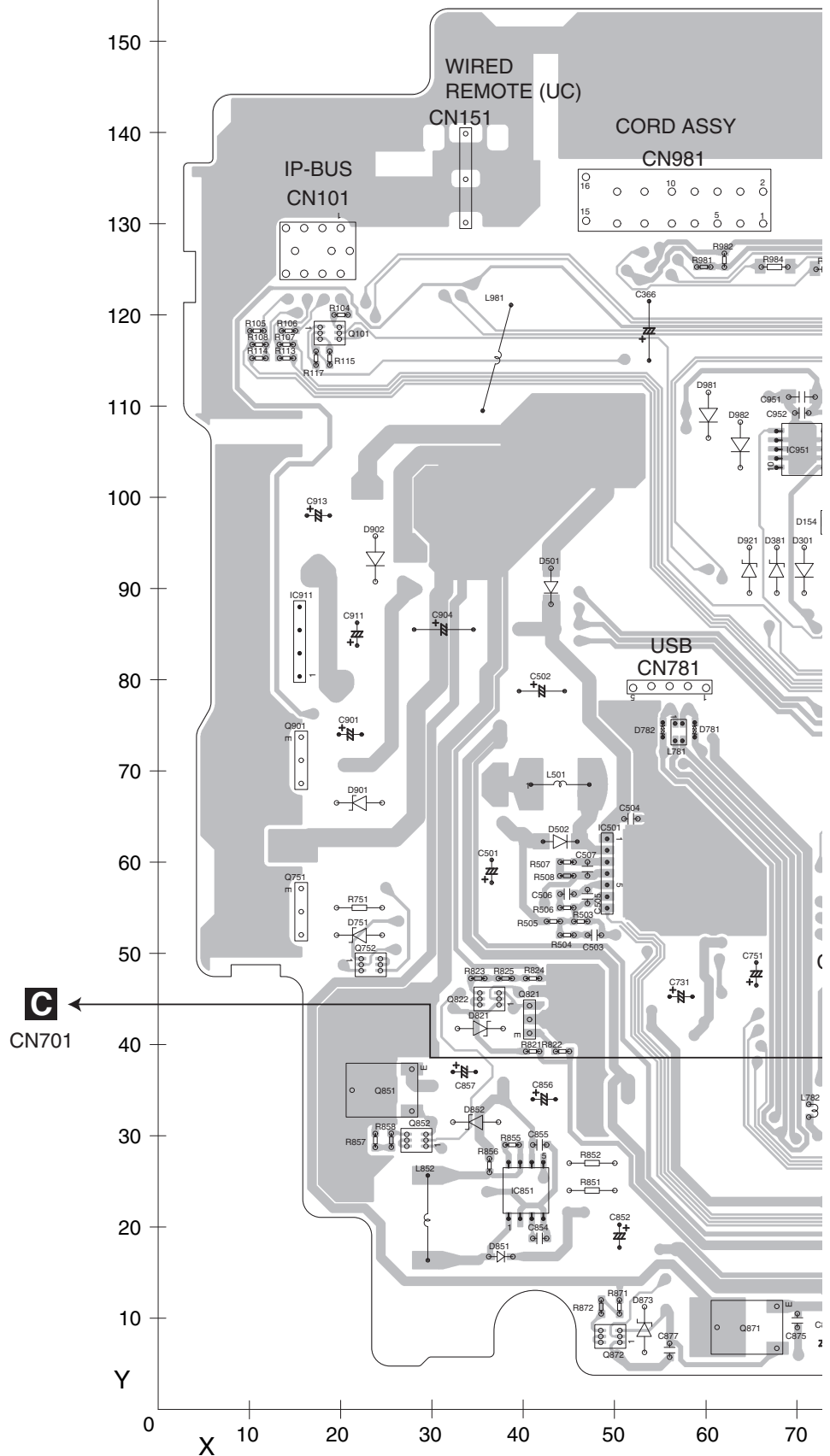
1. The parts mounted on this PCB include all necessary parts for several destination.

For further information for respective destinations, be sure to check with the schematic diagram.

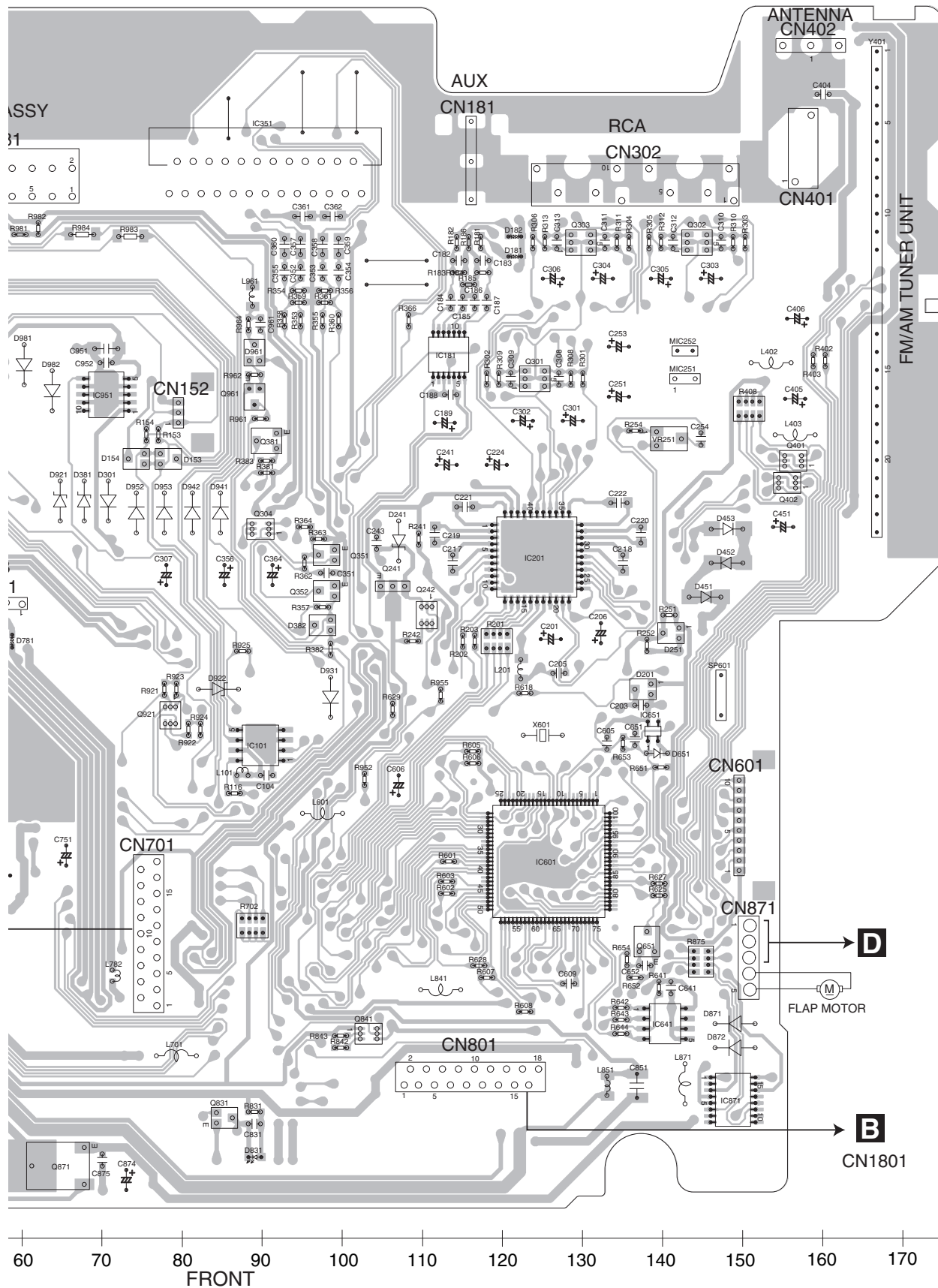
2. Viewpoint of PCB diagrams



A TUNER AMP UNIT



SIDE A



A

B

C

D

E

F

A

A

A TUNER AMP UNIT

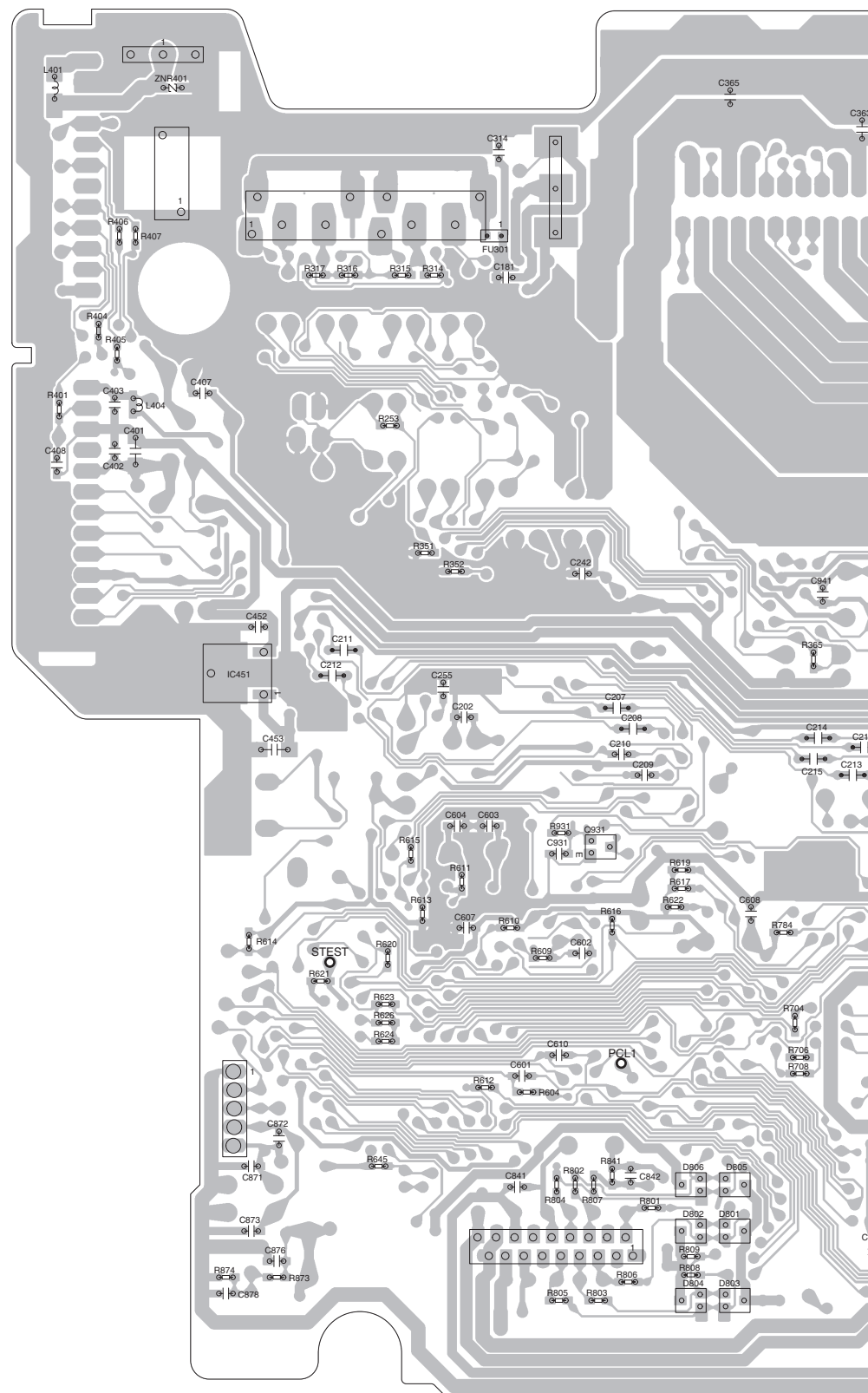
B

C

D

E

F

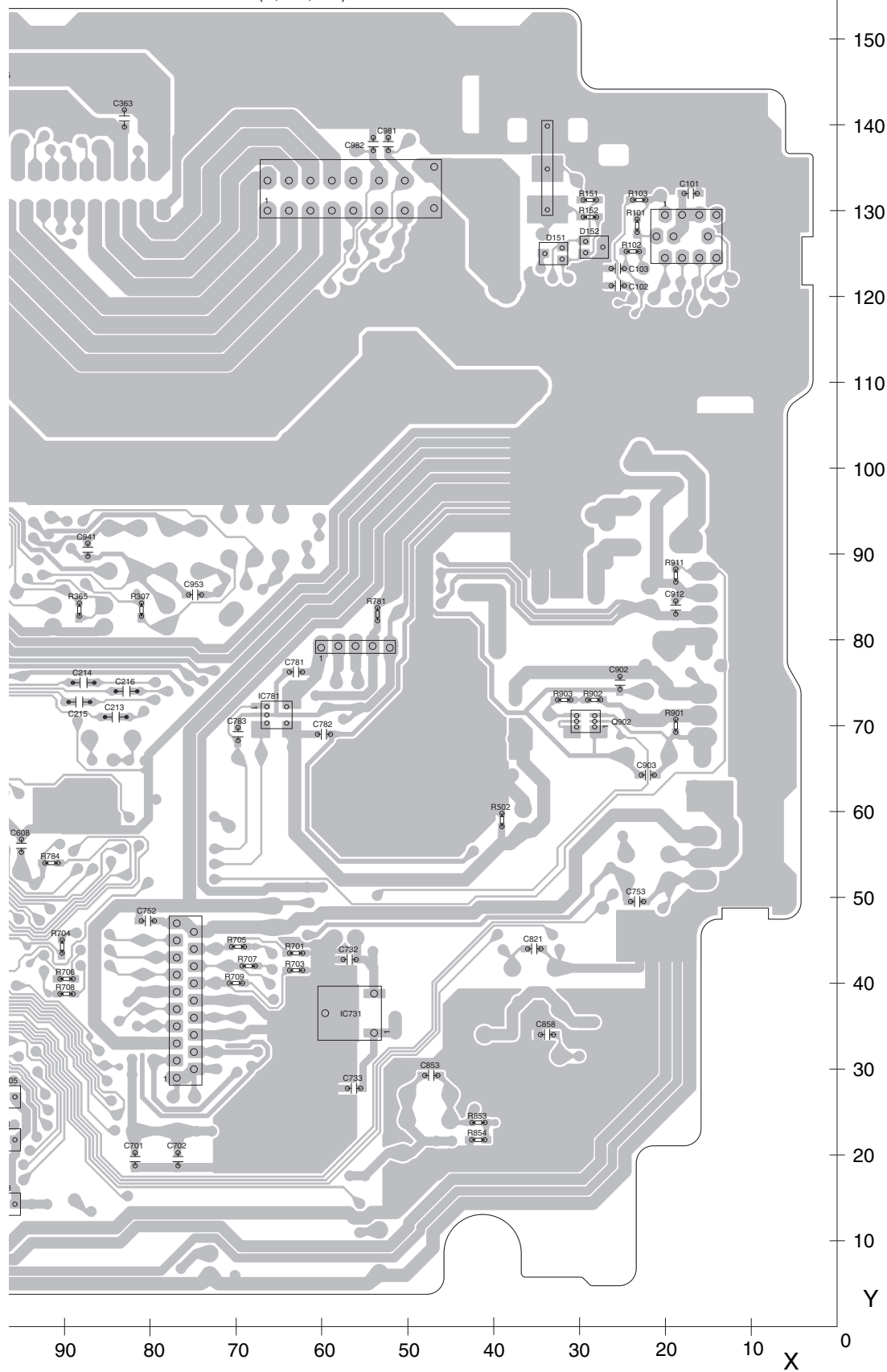


170 160 150 140 130 120 110 100 90

DEH-P600UB/XN/UC

 FU 301 (B,123,129) Fuse 3 A CEK1286

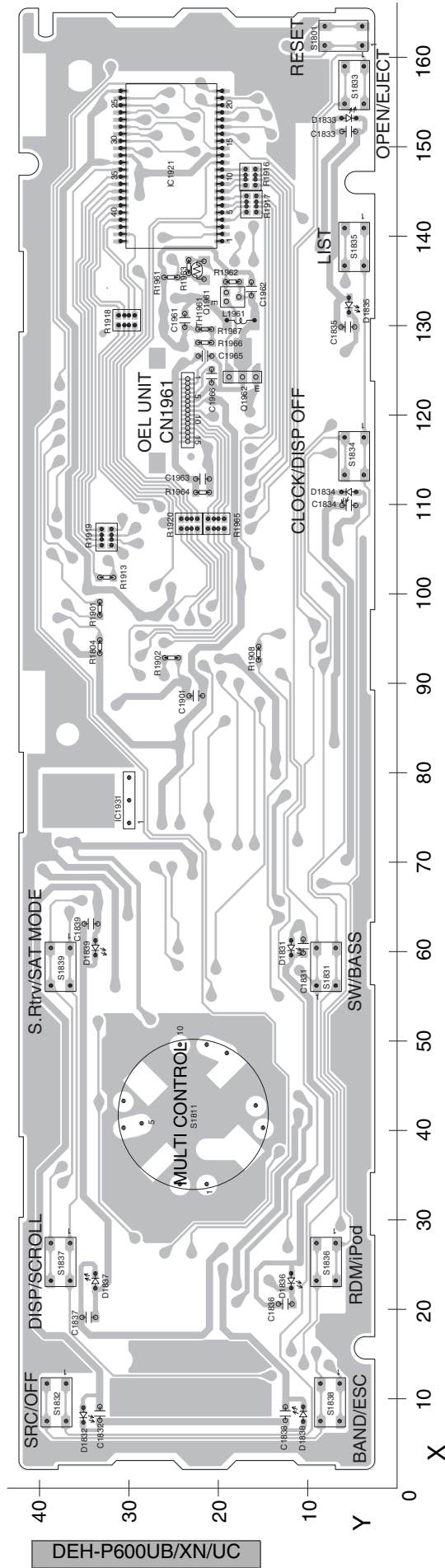
SIDE B



11.2 KEYBOARD UNIT

B KEYBOARD UNIT

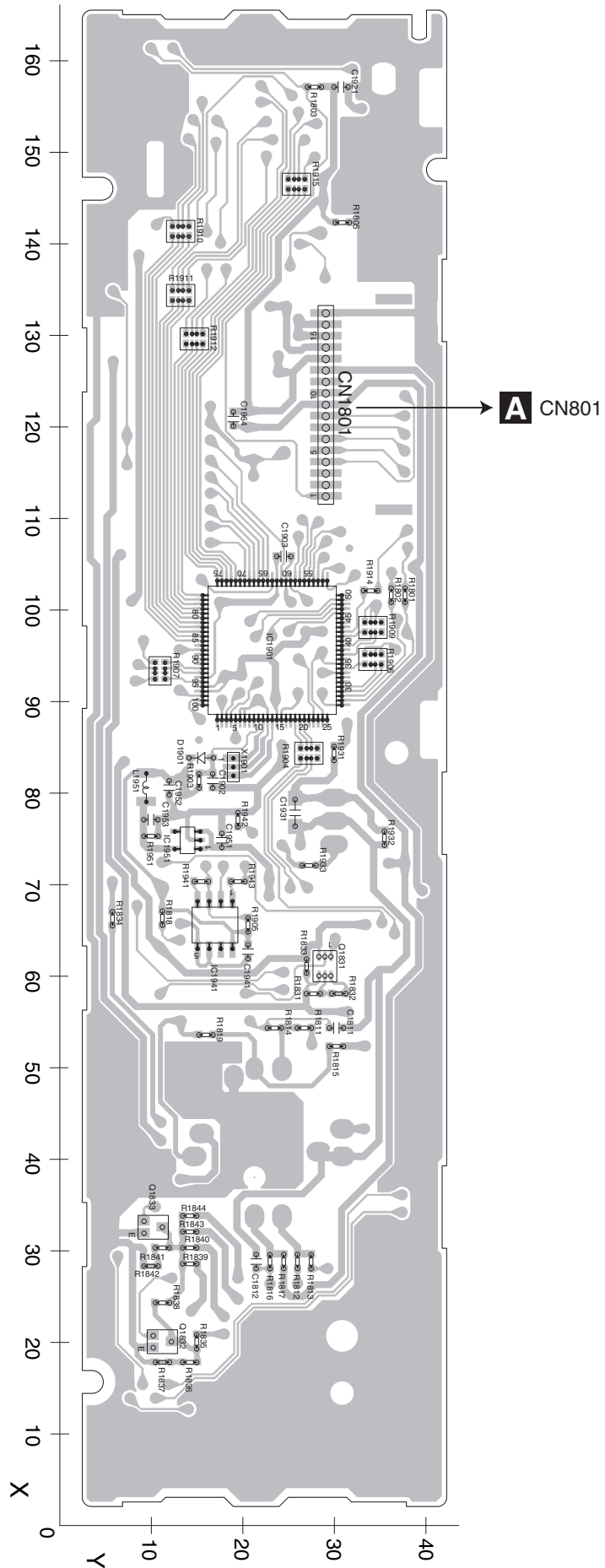
SIDE A



DEH-P600UB/XN/UC

B KEYBOARD UNIT

SIDE B

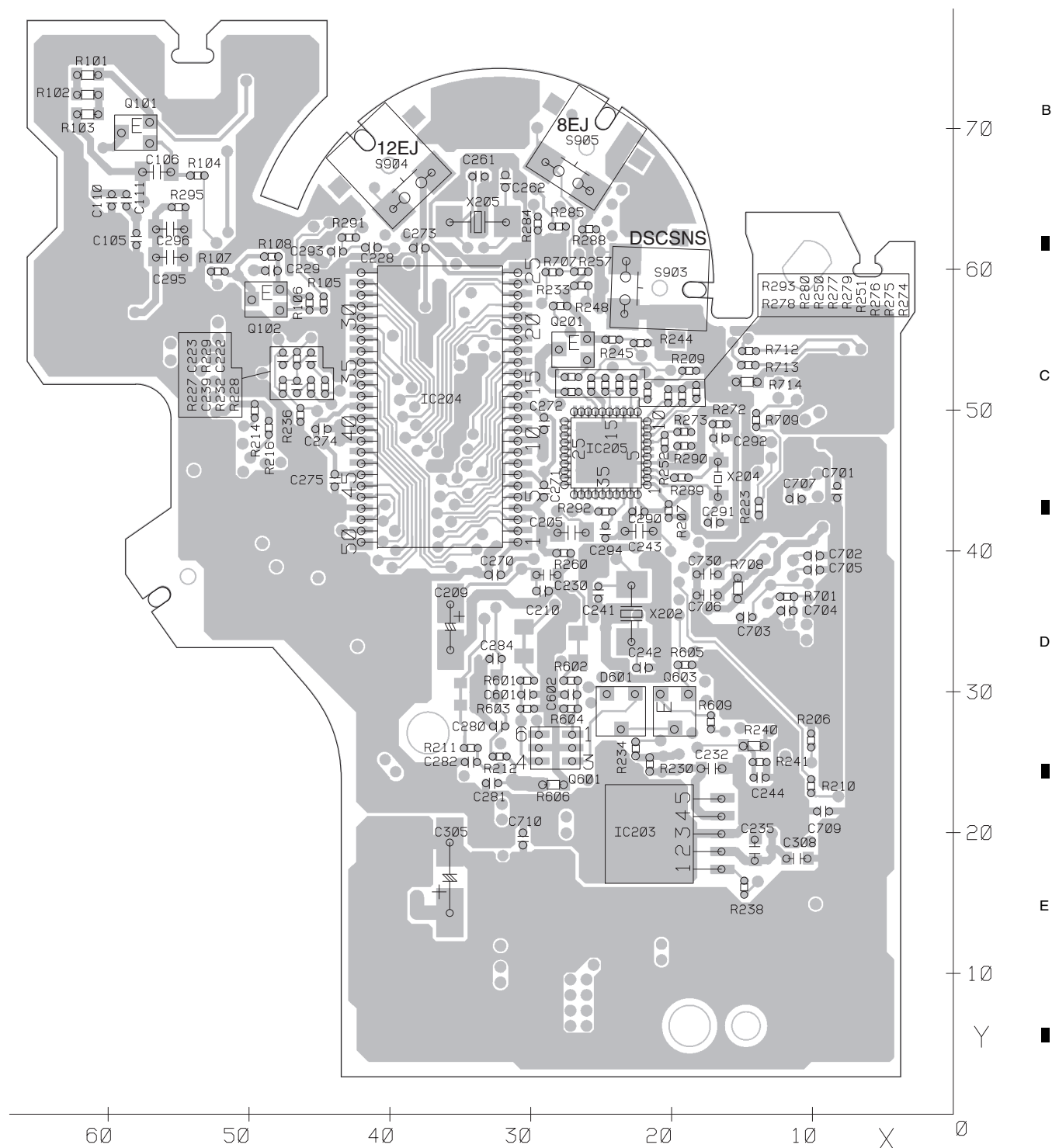


DEH-P600UB/XN/UC

B

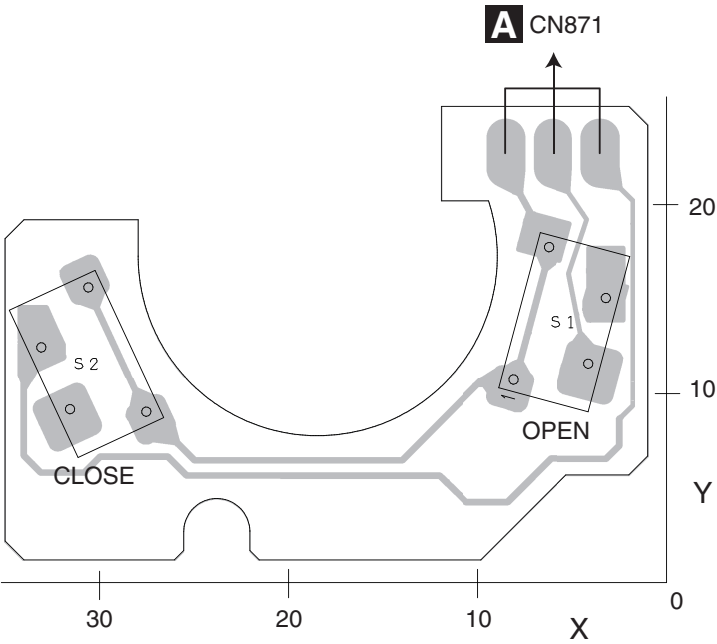
C CD CORE UNIT(S10.5COMP2-iPod)

SIDE B



11.4 SWITCH UNIT

D SWITCH UNIT



12. ELECTRICAL PARTS LIST

NOTE:

- Parts whose parts numbers are omitted are subject to being not supplied.
- The part numbers shown below indicate chip components.

Chip Resistor

RS1/○S○○○○J,RS1/○○S○○○○J

Chip Capacitor (except for CQS.....)

CKS....., CCS....., CSZS.....

- The \triangle mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- Meaning of the figures and others in the parentheses in the parts list.

Example) IC 301 is on the point (face A, 91 of x-axis, and 111 of y-axis) of the corresponding PC board.

IC 301 (A, 91, 111) IC NJM2068V

<u>Circuit Symbol and No.</u>	<u>Part No.</u>
Unit Number : CWN3149(P600UB)	
Unit Number : CWN3148(P6000UB)	
Unit Number : CWN3150(P6050UB)	
Unit Name : Tuner Amp Unit	
Unit Number : (P600UB)	
Unit Number : (P6000UB)	
Unit Number : (P6050UB)	
Unit Name : Keyboard Unit	
Unit Number : CWX3526	
Unit Name : CD Core Unit	
(S10.5COMP2-iPod)	
Unit Number : CWS1389	
Unit Name : Switch Unit	

A

Unit Number : CWN3149(P600UB)
Unit Number : CWN3148(P6000UB)
Unit Number : CWN3150(P6050UB)
Unit Name : Tuner Amp Unit

MISCELLANEOUS

IC 101	(A,90,62) IC	HA12241FP
IC 181	(A,113,110) IC	NJM2794V
IC 201	(A,124,85) IC	PML017A
IC 351	(A,90,136) IC	PAL007C
IC 451	(B,152,82) IC	NJM2885DL1-33
IC 501	(A,54,59) Regulator IC	BD9781HFP
IC 601	(A,126,47) IC	PEG430B8
IC 651	(A,139,63) IC	S-80835CNNB-B8U
IC 731	(B,59,37) IC	NJM2885DL1-33
IC 781	(B,65,71) IC	R5523N001B
IC 851	(A,40,24) IC	NJM2360M

<u>Circuit Symbol and No.</u>	<u>Part No.</u>
IC 871	(A,149,17) IC
IC 911	(A,16,80) IC
IC 951	(A,71,105) IC(P600UB)
Q 101	(A,19,118) Transistor
Q 241	(A,106,80) Transistor
Q 242	(A,111,78) Transistor
Q 301	(A,124,107) Transistor
Q 302	(A,144,124) Transistor
Q 303	(A,130,124) Transistor
Q 304	(A,90,89) Transistor
Q 351	(A,98,85) Chip Transistor
Q 352	(A,98,81) Chip Transistor
Q 381	(A,91,100) Transistor
Q 651	(A,138,37) Transistor
Q 751	(A,15,55) Transistor
Q 752	(A,23,49) Transistor
Q 821	(A,43,43) Transistor
Q 822	(A,36,45) Transistor
Q 831	(A,85,15) Chip Transistor
Q 841	(A,103,26) Transistor
Q 851	(A,23,35) Transistor
Q 852	(A,28,30) Transistor
Q 871	(A,63,9) Transistor
Q 872	(A,50,8) Transistor
Q 901	(A,15,71) Transistor
Q 902	(B,29,71) Transistor
Q 921	(A,79,65) Transistor
Q 931	(B,111,63) Chip Transistor
Q 961	(A,89,105) Transistor
D 181	(A,122,123) Diode
D 182	(A,122,125) Diode
D 201	(A,138,69) Diode Network
D 241	(A,107,87) Diode
D 301	(A,71,92) Diode
D 381	(A,68,92) Diode
D 382	(A,98,77) Diode
D 453	(A,148,89) Diode
D 501	(A,43,90) Diode
D 502	(A,44,62) Diode
D 751	(A,22,52) Diode
D 801	(B,97,22) Diode
BA6288FS	
NJM2388F84	
TPD1018F	
UMF23N	
2SD1767	
UMD3N	
IMH23	
IMH23	
IMH23	
UMD3N	
DTC114EUA	
DTC114EUA	
2SC3052-12	
2SC3052-12	
2SD2396	
UMD3N	
2SD1767	
UMD3N	
DTC114EUA	
UMF23N	
2SD1760F5	
UMD3N	
2SD1760F5	
UMD3N	
2SD2396	
UMD3N	
UMX1N	
DTC114EUA	
2SA1576A	
MALS068X	
MALS068X	
DA204U	
HZS12L(B1)	
1SS133	
HZS9L(A3)	
DAN202U	
1SR154-400	
1SR154-400	
RB060L-40	
HZS7L(C3)	
DAP202U	

1

2

3

4

Circuit Symbol and No.**Part No.****Circuit Symbol and No.****Part No.**

D 802 (B,102,22) Diode
D 803 (B,97,14) Diode
D 804 (B,102,14) Diode

DAN202U
DAP202U
DAN202U

R 181 (A,117,124)
R 182 (A,114,124)
R 183 (A,115,121)
R 184 (A,118,121)
R 201 (A,119,75)

RS1/16S181J
RS1/16S181J
RS1/16S223J
RS1/16S223J
RAB4C102J

A

D 805 (B,97,27) Diode
D 806 (B,102,27) Diode
D 821 (A,35,42) Diode
D 831 (A,89,10) LED
D 851 (A,38,17) Diode

DAP202U
DAN202U
HZS11L(A1)
SMLE12BC7T(NP)
RB551V-30

R 202 (A,115,75)
R 203 (A,117,75)
R 242 (A,109,75)
R 301 (A,130,107)
R 302 (A,118,107)

RS1/16S101J
RS1/16S101J
RS1/16S182J
RS1/16S390J
RS1/16S390J

D 852 (A,35,32) Diode
D 871 (A,149,27) Diode
D 872 (A,149,24) Diode
D 873 (A,53,9) Diode
D 901 (A,22,67) Diode

HZS11L(A1)
1SS133
1SS133
HZS7L(B3)
HZS6L(B1)

R 303 (A,150,124)
R 304 (A,136,124)
R 305 (A,138,124)
R 306 (A,124,124)
R 307 (B,81,84)

RS1/16S390J
RS1/16S390J
RS1/16S390J
RS1/16S390J
RS1/16S102J

B

D 902 (A,24,93) Diode
D 921 (A,65,92) Diode
D 922 (A,85,69) Diode
D 931 (A,99,68) Diode
D 941 (A,85,91) Diode(P6000UB, P6050) MPG06G-6415G50

MPG06G-6415G50
HZS7L(C3)
HZS7L(B2)
MPG06G-6415G50
MPG06G-6415G50

R 308 (A,129,107)
R 309 (A,120,107)
R 310 (A,149,124)
R 311 (A,134,124)
R 312 (A,140,124)

RS1/16S223J
RS1/16S223J
RS1/16S223J
RS1/16S223J
RS1/16S223J

D 942 (A,81,91) Diode(P6000UB, P6050) MPG06G-6415G50
D 952 (A,74,91) Diode(P600UB) MPG06G-6415G50
D 953 (A,78,91) Diode(P600UB) MPG06G-6415G50
D 961 (A,89,111) Diode
D 981 (A,60,109) Diode

MPG06G-6415G50
MPG06G-6415G50
MPG06G-6415G50
DAN202U
MPG06G-6415G50

R 313 (A,125,124)
R 314 (B,129,125)
R 316 (B,139,125)
R 351 (B,130,95)
R 352 (B,127,93)

RS1/16S223J
RS1/16S0R0J
RS1/16S0R0J
RS1/16S472J
RS1/16S472J

C

D 982 (A,64,106) Diode
ZNR401 (B,158,145) Surge Protector
L 201 (A,122,71) Inductor
L 401 (B,170,145) Inductor
L 402 (A,154,109) Inductor

MPG06G-6415G50
IMSA-6801-01Y901
LCTAW2R2J2520
LCTAW220J2520
LAU1R0K

R 353 (A,95,115)
R 354 (A,95,118)
R 355 (A,98,115)
R 356 (A,98,118)
R 357 (A,98,79)

RS1/16S182J
RS1/16S272J
RS1/16S182J
RS1/16S272J
RS1/16S472J

L 403 (A,157,100) Inductor
L 501 (A,44,69) Inductor
L 601 (A,98,53) Ferri-Inductor
L 781 (A,57,74) Inductor
L 782 (A,71,33) Inductor

LAU2R2K
CTH1385
LAU100K
CTF1713
CTF1379

R 358 (A,93,115)
R 359 (A,95,117)
R 360 (A,100,115)
R 361 (A,98,117)
R 362 (A,95,84)

RS1/16S182J
RS1/16S272J
RS1/16S182J
RS1/16S272J
RS1/16S103J

D

L 841 (A,112,31) Ferri-Inductor
L 852 (A,30,21) Inductor
L 961 (A,89,118) Inductor
L 981 (A,35,109) Choke Coil 600 μ H
X 601 (A,125,63) Crystal Resonator 15.000 MHz

LAU100K
CTF1660
LCTAW2R2J2520
CTH1280
CSS1653

R 363 (A,97,87)
R 364 (A,95,89)
R 365 (B,88,84)
R 366 (A,108,115)
R 381 (A,91,96)

RS1/16S103J
RS1/16S331J
RS1/16S101J
RS1/16S103J
RS1/16S473J

⚠FU301 (B,123,129) Fuse 3 A
⚠ Fuse 10A

CEK1286
YEK5001

SP601 (A,147,68) Buzzer
Y 401 (A,167,148) FM/AM Tuner Unit

CPV1062

R 382 (A,99,74)
R 383 (A,91,97)
R 401 (B,170,111)
R 403 (A,159,110)
R 405 (B,164,117)

RS1/16S223J
RS1/16S104J
RS1/16S681J
RS1/16S681J
RS1/16S681J

RESISTORS

R 101 (B,23,128)
R 102 (B,24,125)
R 103 (B,23,131)
R 104 (A,20,120)
R 105 (A,11,118)

RS1/16S620J
RS1/16S101J
RS1/16S101J
RS1/16S222J
RS1/16S181J

R 406 (B,163,129)
R 407 (B,162,129)
R 502 (B,39,59)
R 503 (A,46,54)
R 504 (A,45,52)

RS1/16S681J
RS1/16S681J
RS1/10SR471J
RS1/16S3302F
RS1/16S333J

E

R 106 (A,14,118)
R 107 (A,14,117)
R 108 (A,11,117)
R 113 (A,14,115)
R 114 (A,11,115)

RS1/16S181J
RS1/16S223J
RS1/16S223J
RS1/10SR102J
RS1/10SR102J

R 505 (A,43,54)
R 506 (A,45,55)
R 507 (A,45,60)
R 601 (A,113,47)
R 602 (A,113,43)

RS1/16S8201F
RS1/16S683J
RS1/16S823J
RS1/16S104J
RS1/16S104J

F

R 115 (A,19,115)
R 116 (A,87,56)
R 117 (A,17,115)
R 151 (B,29,131) (P600UB, P6000UB)
R 152 (B,29,129) (P600UB, P6000UB)

RS1/16S562J
RS1/10SR102J
RS1/16S332J
RS1/16S102J
RS1/16S102J

R 603 (A,113,45)
R 604 (B,119,37)
R 605 (A,116,61)
R 606 (A,116,59)
R 607 (A,118,33)

RS1/10SR102J
RS1/16S681J
RS1/16S472J
RS1/16S472J
RS1/16S104J

1

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3

4

5		6		7		8	
<u>Circuit Symbol and No.</u>		<u>Part No.</u>		<u>Circuit Symbol and No.</u>		<u>Part No.</u>	
R 608	(A,123,28)	RS1/16S104J		R 901	(B,19,70)	RS1/16S223J	
R 609	(B,118,51)	RS1/16S222J		R 902	(B,28,73)	RS1/16S681J	
R 610	(B,121,55)	RS1/16S473J		R 903	(B,32,73)	RS1/16S681J	
R 611	(B,126,60)	RS1/16S0R0J		R 911	(B,19,88)	RS1/16S473J	A
R 612	(B,124,37)	RS1/16S472J		R 921	(A,78,69)	RS1/16S104J	
R 613	(B,131,56)	RS1/16S473J		R 922	(A,81,64)	RS1/16S103J	
R 614	(B,149,53)	RS1/16S104J		R 923	(A,79,69)	RS1/16S473J	
R 615	(B,132,63)	RS1/16S102J		R 924	(A,82,64)	RS1/16S223J	
R 616	(B,110,55)	RS1/16S104J		R 925	(A,88,73)	RS1/16S472J	
R 617	(B,103,59)	RS1/16S104J		R 931	(B,116,65)	RS1/16S103J	
R 618	(A,123,68)	RS1/10SR102J		R 955	(A,112,68) (P600UB)	RS1/16S103J	
R 619	(B,103,61)	RS1/16S104J		R 961	(A,90,102)	RS1/10SR102J	
R 620	(B,134,51)	RS1/16S103J		R 962	(A,89,108)	RS1/16S472J	
R 621	(B,142,49)	RS1/16S473J		R 964	(A,88,114)	RS1/16S153J	
R 622	(B,103,57)	RS1/16S223J		R 982	(A,62,126) (P600UB)	RS1/16S0R0J	B
R 623	(B,135,46)	RS1/16S104J		R 983	(A,74,125)	RS1/4SA102J	
R 624	(B,135,42) (P6050UB)	RS1/16S104J		R 984	(A,68,125)	RS1/4SA102J	
R 625	(A,140,43) (P600UB, P6000UB)	RS1/16S0R0J		CAPACITORS			
R 626	(B,135,44) (P6000UB)	RS1/16S104J					
R 627	(A,140,44) (P600UB)	RS1/16S0R0J		C 101	(B,17,132)	CKSRYB104K16	
				C 102	(B,26,121)	CKSRYB102K50	
R 628	(A,117,34)	RS1/16S104J		C 103	(B,26,123)	CKSRYB102K50	
R 629	(A,106,66)	RS1/16S473J		C 181	(B,122,125)	CKSRYB104K16	
R 641	(A,140,31)	RS1/16S104J		C 182	(A,115,122)	CKSRYB472K50	
R 651	(A,140,59)	RS1/16S183J					
R 652	(A,137,33)	RS1/16S473J		C 183	(A,118,122)	CKSRYB472K50	C
				C 184	(A,114,117)	CKSRYB105K10	
R 653	(A,135,62)	RS1/10SR102J		C 185	(A,115,117)	CKSRYB105K10	
R 654	(A,136,35)	RS1/10SR102J		C 186	(A,117,117)	CKSRYB105K10	
R 701	(B,63,44)	RS1/16S473J		C 187	(A,118,117)	CKSRYB105K10	
R 702	(A,89,39)	RAB4C472J					
R 703	(B,63,42)	RS1/16S104J		C 188	(A,114,105)	CKSRYB104K16	
				C 189	(A,113,102)	CEJQ220M16	
R 704	(B,90,44)	RS1/16S221J		C 201	(A,126,75)	CEJQ470M16	
R 705	(B,70,44)	RS1/16S221J		C 202	(B,126,77)	CKSRYB104K16	
R 706	(B,90,41)	RS1/16S221J		C 203	(A,137,67)	CCSRCH470J50	
R 707	(B,69,42)	RS1/16S221J					
R 708	(B,90,39)	RS1/16S221J		C 205	(A,127,71)	CKSRYB474K10	
				C 206	(A,132,76)	CEJQ100M16	D
R 709	(B,70,40)	RS1/16S102J		C 207	(B,110,78)	CKSRYB105K10	
R 751	(A,22,55)	RD1/4PU102J		C 208	(B,108,76)	CKSRYB105K10	
R 784	(B,92,54)	RS1/16S103J		C 209	(B,107,71)	CKSRYB105K10	
R 801	(B,106,24)	RS1/16S222J					
R 802	(B,114,27)	RS1/16S222J		C 210	(B,109,73)	CKSRYB105K10	
				C 211	(B,139,85)	CKSRYB224K16	
R 803	(B,112,14)	RS1/16S222J		C 212	(B,140,82)	CKSRYB224K16	
R 804	(B,116,27)	RS1/16S222J		C 213	(B,84,71)	CKSRYB105K10	
R 805	(B,116,14)	RS1/16S222J		C 214	(B,88,75)	CKSRYB105K10	
R 806	(B,108,16)	RS1/16S222J					
R 807	(B,112,27)	RS1/16S104J		C 215	(B,88,73)	CKSRYB105K10	
				C 216	(B,83,74)	CKSRYB105K10	E
R 808	(B,102,17)	RS1/16S104J		C 217	(A,114,84)	CKSQYB475K10	
R 821	(A,41,39)	RS1/16S473J		C 218	(A,135,84)	CKSQYB475K10	
R 822	(A,44,39)	RS1/16S1R0J		C 219	(A,112,88)	CKSQYB475K10	
R 824	(A,41,47)	RS1/10SR561J					
R 831	(A,89,16)	RS1/16S331J		C 220	(A,137,88)	CKSQYB475K10	
				C 221	(A,115,91)	CKSQYB475K10	
R 842	(A,100,24)	RS1/10SR102J		C 222	(A,135,92)	CKSQYB475K10	
R 843	(A,100,25)	RS1/16S472J		C 224	(A,119,97)	CEJQ100M16	
R 851	(A,48,24)	RD1/4PU272J		C 241	(A,113,97)	CEJQ470M16	
R 853	(B,42,24)	RS1/16S101J					
R 854	(B,42,22)	RS1/16S101J		C 242	(B,113,93)	CKSRYB104K16	
				C 243	(A,104,87)	CKSRYB224K16	
R 855	(A,39,29)	RS1/10SR821J		C 255	(B,128,80)	CKSRYB104K16	F
R 856	(A,36,27)	RS1/16S1R0J		C 301	(A,129,102)	CEJQ100M16	
R 857	(A,24,30)	RS1/10SR561J		C 302	(A,123,102)	CEJQ100M16	
R 871	(A,51,11)	RS1/10SR102J					
R 875	(A,145,35)	RAB4C102J					

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Circuit Symbol and No.**Part No.****Circuit Symbol and No.****Part No.**

C 303 (A,146,120) CEJQ100M16
 C 304 (A,133,120) CEJQ100M16
 C 305 (A,140,120) CEJQ100M16
 A C 306 (A,126,120) CEJQ100M16
 C 307 (A,78,83) CEJQ220M16

C 352 (A,95,121) CKSRYB474K10
 C 353 (A,98,121) CKSRYB474K10
 C 354 (A,100,121) CKSRYB474K10
 C 355 (A,93,121) CKSRYB474K10
 C 356 (A,85,83) CEJQ330M10

C 357 (A,95,124) CKSQYB474K16
 C 358 (A,98,124) CKSQYB474K16
 C 359 (A,100,124) CKSQYB474K16
 C 360 (A,93,124) CKSQYB474K16
 B C 361 (A,95,128) CKSQYB225K10

C 362 (A,99,128) CKSQYB225K10
 C 364 (A,91,83) CEJQ100M16
 C 365 (B,97,144) CKSRYB104K16
 C 366 (A,54,118) 3 300 μ F/16 V CCH1486
 C 402 (B,164,106) CKSRYB103K50

C 403 (B,164,111) CKSRYB103K50
 C 404 (A,160,143) CKSRYB103K50
 C 405 (A,157,105) CEJQ470M6R3
 C 406 (A,157,115) CEJQ101M16
 C 451 (A,155,89) CEJQ220M16

C 452 (B,148,87) CKSRYB103K50
 C 453 (B,147,74) CKSYB475K16
 C 501 (A,37,59) 100 μ F/6.3 V CCH1804
 C 502 (A,42,79) CEJQ221M16
 C 503 (A,48,52) CKSRYB221K50

C 504 (A,52,65) CKSRYB105K16
 C 506 (A,45,57) CKSRYB102K50
 C 507 (A,47,59) CKSRYB104K16
 C 603 (B,123,66) CCSRCH180J50
 C 604 (B,127,66) CCSRCH180J50

D C 606 (A,107,57) CEJQ100M16
 C 607 (B,126,55) CKSRYB103K50
 C 651 (A,137,62) CKSRYB105K10
 C 652 (A,138,34) CKSRYB104K16
 C 701 (B,82,20) CKSRYB104K16

C 731 (A,57,45) CEJQ220M16
 C 732 (B,57,43) CKSRYB103K50
 C 733 (B,56,28) CKSRYB474K10
 C 751 (A,66,48) CEJQ101M16
 C 752 (B,80,47) CKSRYB102K50

E C 753 (B,23,50) CKSRYB473K50
 C 781 (B,63,76) CKSRYB104K16
 C 782 (B,60,69) CKSRYB104K16
 C 821 (B,35,44) CKSRYB473K50
 C 841 (B,120,27) CKSRYB473K50

C 852 (A,51,19) CEJQ470M25
 C 853 (B,47,29) CKSRYB103K50
 C 854 (A,42,19) CCSRCH331J50
 C 855 (A,42,29) CKSRYB104K16
 C 856 (A,42,34) CEJQ101M16

C 858 (B,34,34) CKSRYB104K16
 F C 871 (B,149,29) CCSRCH101J50
 C 872 (B,146,32) CKSRYB102K50
 C 873 (B,149,22) CCSRCH101J50
 C 874 (A,73,7) CEJQ220M16

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B**Unit Number : (P600UB)****Unit Number : (P6000UB)****Unit Number : (P6050UB)****Unit Name : Keyboard Unit****MISCELLANEOUS**

IC 1901	(B,96,23) IC	PEG432A
IC 1921	(A,148,25) IC(P600UB)	PD8178A
	(A,148,25) IC(P6000UB)	PD8177A
	(A,148,25) IC(P6050UB)	PD8180A
IC 1931	(A,77,35) IC	GP1UX31RK
IC 1951	(B,75,14) IC	S-1200B33-M5
Q 1831	(B,61,29) Transistor	UMD3N
Q 1832	(B,20,11) Digital Transistor	DTC143EUA
Q 1833	(B,33,10) Transistor	DTC123JU
Q 1961	(A,133,18) Transistor	2SC4617
Q 1962	(A,126,17) Transistor	2SD1664
D 1831	(A,60,12) LED	SMLE12BC7T(NP)
D 1832	(A,8,35) LED	SMLE12BC7T(NP)
D 1833	(A,153,5) LED	SMLE12BC7T(NP)
D 1834	(A,111,5) LED	SMLE12BC7T(NP)
D 1835	(A,132,5) LED	SMLE12BC7T(NP)
D 1836	(A,23,12) LED	SMLE12BC7T(NP)
D 1837	(A,23,34) LED	SMLE12BC7T(NP)
D 1838	(A,8,11) LED	SMLE12BC7T(NP)
D 1839	(A,60,34) LED	SMLE12BC7T(NP)
D 1901	(B,84,16) Diode	1SS355
L 1951	(B,81,10) Inductor	CTF1617
L 1961	(A,131,18) Inductor	CTF1617
TH1961	(A,136,22) Thermistor	CCX1037
X 1901	(B,83,19) Ceramic Resonator	16.000 MHz CSS1616
S 1801	(A,162,6) Push Switch	CSG1155
S 1811	(A,42,23) Switch (MULTI CONTROL)	CSX1120
S 1831	(A,58,8) Push Switch	CSG1155
S 1832	(A,10,38) Push Switch	CSG1155
S 1833	(A,157,5) Push Switch	CSG1155
S 1834	(A,115,5) Push Switch	CSG1155
S 1835	(A,139,5) Push Switch	CSG1155
S 1836	(A,25,8) Push Switch	CSG1155
S 1837	(A,25,38) Push Switch	CSG1155
S 1838	(A,10,8) Push Switch	CSG1155

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<u>Circuit Symbol and No.</u>	<u>Part No.</u>	<u>Circuit Symbol and No.</u>	<u>Part No.</u>
S 1839 (A,58,38) Push Switch	CSG1155	C 1951 (B,75,18)	CKSRYB105K10
RESISTORS		C 1952 (B,77,10)	CKSRYB105K10
R 1801 (B,102,38)	RS1/16S222J	C 1953 (B,81,12)	CKSRYB105K10
R 1802 (B,102,36)	RS1/16S222J	C 1963 (A,113,22)	CKSRYB104K16
R 1803 (B,157,28)	RS1/16S333J	C 1964 (B,121,19)	CKSRYB104K16
R 1811 (B,54,27)	RS1/16S103J	C 1965 (A,127,22)	CKSRYB104K25
R 1812 (B,29,26)	RS1/16S333J	C 1966 (A,124,21)	CKSRYB104K25
R 1813 (B,29,28)	RS1/16S103J	<div>C</div> Unit Number : CWX3526 Unit Name : CD Core Unit (S10.5COMP2-iPod)	
R 1814 (B,54,24)	RS1/16S102J		
R 1815 (B,52,30)	RS1/16S332J		
R 1816 (B,29,23)	RS1/16S102J	MISCELLANEOUS	
R 1818 (B,66,11)	RS1/16S103J	IC 201 (A,36,46) IC	PE5611B
R 1819 (B,54,16)	RS1/16S222J	IC 202 (A,24,30) IC	S-93C66BD0I-J8
R 1834 (B,66,6)	RS1/16S821J	IC 205 (B,25,47) IC	341S2094
R 1835 (B,20,15)	RS1/16S821J	IC 301 (A,29,15) IC	BA5839FP
R 1836 (B,18,14)	RS1/16S152J	Q 101 (B,58,70) Transistor	2SA1577
R 1839 (B,29,14)	RS1/16S681J	Q 102 (B,49,58) Chip Transistor	2SB1689
R 1840 (B,30,14)	RS1/16S681J	Q 201 (B,27,54) Transistor	2SA1577
R 1841 (B,30,11)	RS1/16S271J	X 201 (A,23,38) Ceramic Resonator 16.934 MHz	CSS1603
R 1843 (B,32,14)	RS1/16S681J	X 204 (B,17,45) Oscillator 32.768 kHz	CSS1735
R 1844 (B,34,14)	RS1/16S681J	X 205 (B,34,63) Oscillator 48.000 MHz	CSS1753
R 1901 (A,98,33)	RS1/16S103J	S 901 (A,55,37) Switch(HOME)	CSN1067
R 1902 (A,93,25)	RS1/16S473J	S 903 (B,20,59) Switch(DSCSNS)	CSN1067
R 1903 (B,81,15)	RS1/16S154J	S 904 (B,41,68) Switch(12EJ)	CSN1068
R 1904 (B,84,27)	RAB4CQ102J	S 905 (B,25,70) Switch(8EJ)	CSN1068
R 1905 (B,66,21)	RS1/16S104J	RESISTORS	
R 1906 (B,95,34)	RAB4CQ473J	R 101 (B,61,74)	RS1/10SR2R4J
R 1907 (B,93,11)	RAB4CQ102J	R 102 (B,61,72)	RS1/10SR2R4J
R 1908 (A,93,16)	RS1/16S221J	R 103 (B,61,71)	RS1/10SR2R7J
R 1909 (B,98,34)	RAB4CQ473J	R 104 (B,54,67)	RS1/16SS222J
R 1910 (B,141,13)	RAB4CQ101J	R 105 (B,45,58)	RS1/16SS102J
R 1911 (B,134,13)	RAB4CQ101J	R 107 (B,52,60)	RS1/16SS105J
R 1912 (B,130,15)	RAB4CQ101J	R 201 (A,20,33)	RS1/16S472J
R 1913 (A,102,33)	RS1/16S101J	R 202 (A,27,33)	RS1/16SS473J
R 1914 (B,102,34)	RS1/16S101J	R 203 (A,51,44)	RS1/16S473J
R 1915 (B,147,26)	RAB4CQ101J	R 204 (A,24,58)	RS1/16SS221J
R 1916 (A,147,16)	RAB4CQ101J	R 206 (B,10,27)	RS1/16SS104J
R 1917 (A,144,16)	RAB4CQ101J	R 210 (B,10,23)	RS1/16SS102J
R 1918 (A,131,30)	RAB4CQ101J	R 214 (B,50,50)	RS1/16SS472J
R 1919 (A,106,33)	RAB4CQ101J	R 216 (B,49,49)	RS1/16SS472J
R 1920 (A,108,23)	RAB4CQ101J	R 221 (A,51,48)	RS1/16SS103J
R 1931 (B,84,30)	RS1/16S101J	R 222 (A,51,46)	RS1/16SS103J
R 1932 (B,75,36)	RS1/16S103J	R 223 (B,14,43)	RS1/16SS473J
R 1933 (B,72,27)	RS1/16S2R2J	R 225 (A,51,50)	RS1/16SS103J
R 1951 (B,75,10)	RS1/16S222J	R 226 (A,51,51)	RS1/16SS393J
R 1961 (A,135,25)	RS1/16S333J	R 227 (B,48,52)	RS1/16SS562J
R 1962 (A,135,18)	RS1/16S183J	R 228 (B,45,52)	RS1/16SS122J
R 1963 (A,137,23)	RS1/16S563J	R 229 (B,47,54)	RS1/16SS472J
R 1964 (A,111,22)	RS1/16S392J	R 230 (B,22,25)	RS1/16SS0R0J
R 1965 (A,108,20)	RAB4CQ101J	R 232 (B,46,52)	RS1/16SS122J
R 1966 (A,128,22)	RS1/16S5101D	R 233 (B,26,59)	RS1/16SS103J
CAPACITORS		R 234 (B,23,26)	RS1/16SS473J
C 1901 (A,89,23)	CKSRYB103K50	R 235 (A,26,59)	RS1/16SS473J
C 1902 (B,81,17)	CKSRYF104Z25	R 237 (A,24,35)	RS1/16SS151J
C 1903 (B,106,25)	CKSRYB103K50		
C 1921 (B,157,31)	CKSRYB103K50		
C 1931 (B,78,26)	CKSYB106K6R3		

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Circuit Symbol and No.**Part No.****Circuit Symbol and No.****Part No.**

R 240 (B,14,26)
R 241 (B,14,25)
R 243 (A,22,25)
R 244 (B,22,55)

RS1/16S473J
RS1/16SS103J
RS1/16S0R0J
RS1/16SS473J

C 218 (A,50,52)
C 219 (A,47,54)
C 220 (A,48,54)
C 221 (A,46,54)
C 222 (B,46,54)
C 223 (B,48,54)

CKSSYB473K10
CKSSYB104K10
CKSSYB182K50
CKSSYB104K10
CCSSCH560J50
CCSSCH4R0C50

R 250 (B,25,52)
R 251 (B,22,51)
R 252 (B,21,48)
R 254 (A,26,64)
R 255 (A,26,63)

RS1/16SS101J
RS1/16SS101J
RS1/16SS101J
RS1/16SS104J
RS1/16SS104J

C 224 (A,45,56)
C 226 (A,42,59)
C 227 (A,42,61)
C 228 (B,41,62)
C 229 (B,48,60)

CKSSYB104K10
CCSSCH680J50
CCSSCH470J50
CKSSYB103K16
CKSSYB104K10

R 256 (A,26,62)
R 259 (A,28,66)
R 261 (A,26,65)
R 262 (A,30,60)
R 263 (A,28,63)

RS1/16SS104J
RS1/16SS0R0J
RS1/16SS104J
RS1/16SS0R0J
RS1/16SS0R0J

C 236 (A,50,58)
C 239 (B,47,52)
C 240 (A,38,61)
C 243 (B,22,41)
C 250 (A,52,48)

CKSSYB104K10
CCSSCH220J50
CKSSYB104K10
CKSQYB475K6R3
CKSSYB102K50

R 273 (B,19,48)
R 274 (B,18,51)
R 275 (B,19,51)
R 276 (B,20,51)
R 277 (B,24,52)

RS1/16SS103J
RS1/16SS104J
RS1/16SS104J
RS1/16SS104J
RS1/16SS103J

C 251 (A,52,46)
C 260 (A,28,61)
C 261 (B,34,67)
C 262 (B,32,66)
C 290 (B,22,43)

CKSSYB102K50
CKSSYB104K10
CCSSCH8R0D50
CCSSCH8R0D50
CKSSYB104K10

R 278 (B,27,51)
R 279 (B,23,52)
R 282 (A,30,61)
R 283 (A,29,61)
R 284 (B,30,63)

RS1/16SS1003D
RS1/16SS104J
RS1/16SS240J
RS1/16SS240J
RS1/16SS153J

C 291 (B,17,42)
C 292 (B,17,48)
C 293 (B,44,61)
C 294 (B,25,41)
C 295 (B,56,61)

CCSSCH5R0C50
CCSSCH5R0C50
CKSSYB102K50
CKSSYB103K16
CKSQYB106K6R3

R 285 (B,28,63)
R 289 (B,19,45)
R 291 (B,43,62)
R 292 (B,25,43)
R 293 (B,27,52)

RS1/16SS153J
RS1/16SS0R0J
RS1/16SS272J
RS1/16SS221J
RS1/16SS472J

C 296 (B,56,63)
C 303 (A,36,19)
C 304 (A,36,21)
C 307 (A,22,11)
C 308 (B,11,18)

CKSQYB106K6R3
CKSSYB472K25
CKSSYB223K16
CKSRYB104K16
CKSRYB105K10

R 294 (A,32,63)
R 295 (B,55,64)
R 307 (A,35,19)
R 308 (A,38,19)
R 309 (A,35,21)

RS1/16SS471J
RS1/16SS103J
RS1/16SS183J
RS1/16SS183J
RS1/16SS183J

C 703 (B,15,35)
C 704 (B,12,36)
C 711 (A,31,25)

CCSSCH101J50
CKSSYB102K50
CKSSYB104K10

R 310 (A,38,22)
R 601 (B,30,31)
R 602 (B,27,31)
R 606 (B,28,23)
R 701 (B,12,37)

RS1/16SS183J
RS1/16SS0R0J
RS1/16SS0R0J
RS1/16S0R0J
RS1/16SS221J

R 702 (A,24,56)
R 708 (B,15,37)
R 712 (B,15,54)
R 713 (B,15,53)

RS1/16SS221J
RS1/16S0R0J
RS1/16SS0R0J
RS1/16SS0R0J

CAPACITORS

C 106 (B,57,67)
C 201 (A,27,30)
C 202 (A,28,57)
C 204 (A,24,59)
C 205 (B,27,41)
C 206 (A,23,41)

CKSQYB475K6R3
CKSRYB104K16
CKSSYB104K10
CKSSYB103K16
CKSQYB475K6R3
CKSSYB104K10

C 207 (A,25,38)
C 209 (B,36,35)
C 210 (B,29,37)
C 211 (A,28,35)
C 212 (A,29,30)

CKSRYB104K16
CEVW220M6R3
CKSSYB104K10
CKSSYB104K10
CKSRYB104K16

C 213 (A,46,39)
C 214 (A,29,34)
C 216 (A,51,52)
C 217 (A,48,52)

CKSSYB104K10
CKSSYB104K10
CKSSYB332K50
CKSSYB104K10

D**Unit Number : CWS1389****Unit Name : Switch Unit****MISCELLANEOUS**

S 1 (A,6,14) Switch(OPEN) CSN1051
S 2 (A,32,12) Spring Switch(CLOSE) CSN1052

Miscellaneous Parts List

M 1 Pickup Unit(P10.5)(Service) CXX1942
M 1 Motor Unit(SPINDLE) CXC7134
M 2 Motor Unit(LOADING/CARRIAGE)CXC4026
Motor Unit(FLAP) XXA7400

1. CIRCUIT DESCRIPTIONS

The recent mainstay of the CD LSI is the LSI integrating the core DSP with DAC or RF amplifier, which are generally employed as peripheral circuits, however, PE5611B, used in this product, is an LSI integrating the afore-mentioned LSI unit and microcomputer unit in one chip, with an additional USB host control section.

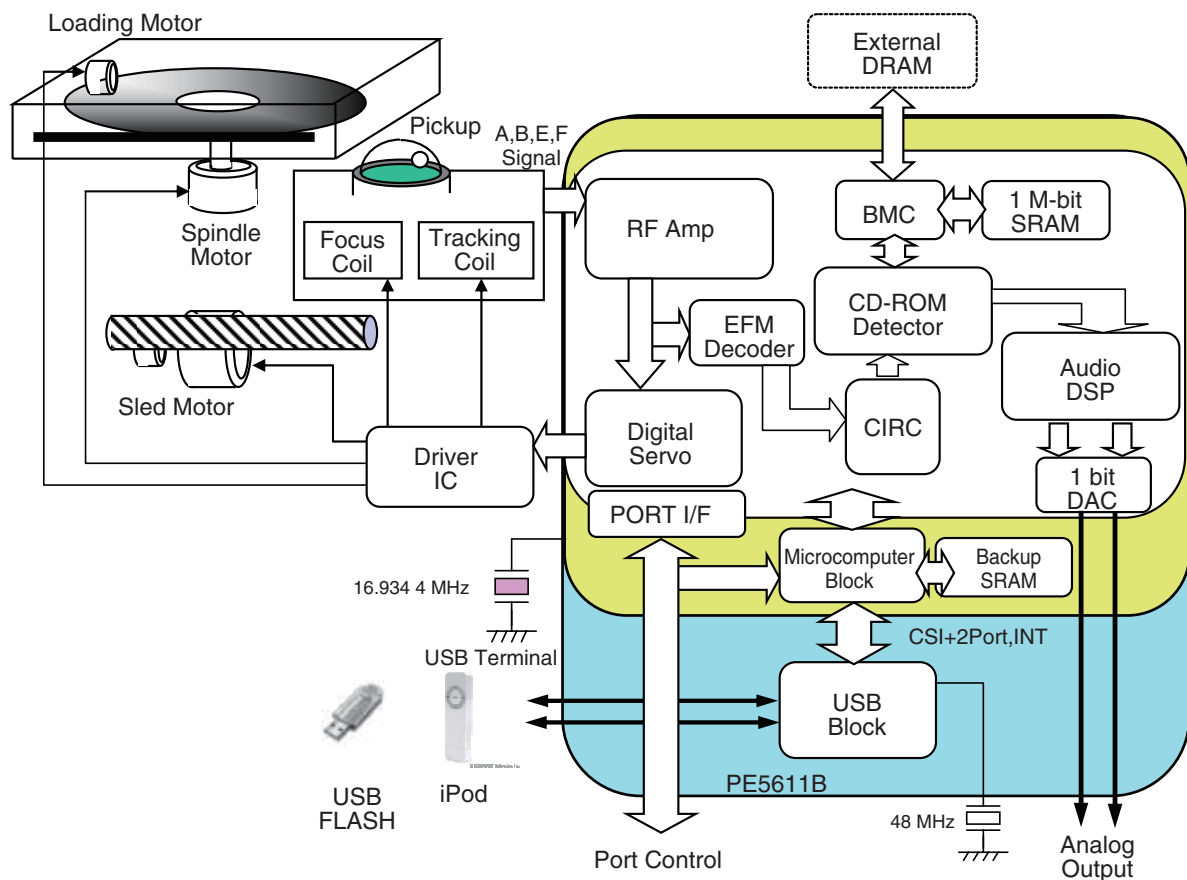


Fig.1.0.1 Block diagram of CD LSI PE5611B

1.1 PREAMPLIFIER BLOCK

In the preamplifier block, the pickup output signals are processed to generate signals that are used in the subsequent blocks: servo, demodulator, and control blocks. Signals from the pickup are I/V converted in the pickup with the preamplifier with built-in photo detectors, and after added with the RF amplifier, they are used to produce such signals as RF, FE, TE, and TE zero-cross signals. The preamplifier block is built in CD LSI PE5611B (IC201), whose parts are described individually below. Incidentally, as this LSI employs a single power supply (+ 3.3 V) specification, the reference voltages of this LSI and the pickup are the REFO (1.65 V) for both. The REFO is an output obtained from REFOUT in the LSI via the buffer amplifier, and is output from the pin 133 of this LSI. All measurements will be performed with this REFO as the reference.

Caution: Be careful not to short-circuit the REFO and GND when measuring.

1.1.1 APC (Automatic Power Control) circuit

Since laser diodes have extremely negative temperature characteristics in optical output when driven in constant current, it is necessary to control the current with the monitor diodes in order to keep the output constant. This is the feature of the APC circuit. The LD current is obtained by measuring the voltage between LD1 and V3R3, and divide the value by 7.5 (ohms), which becomes about 30 mA. The voltage difference between LD and V3R3 will be about 225 mV.

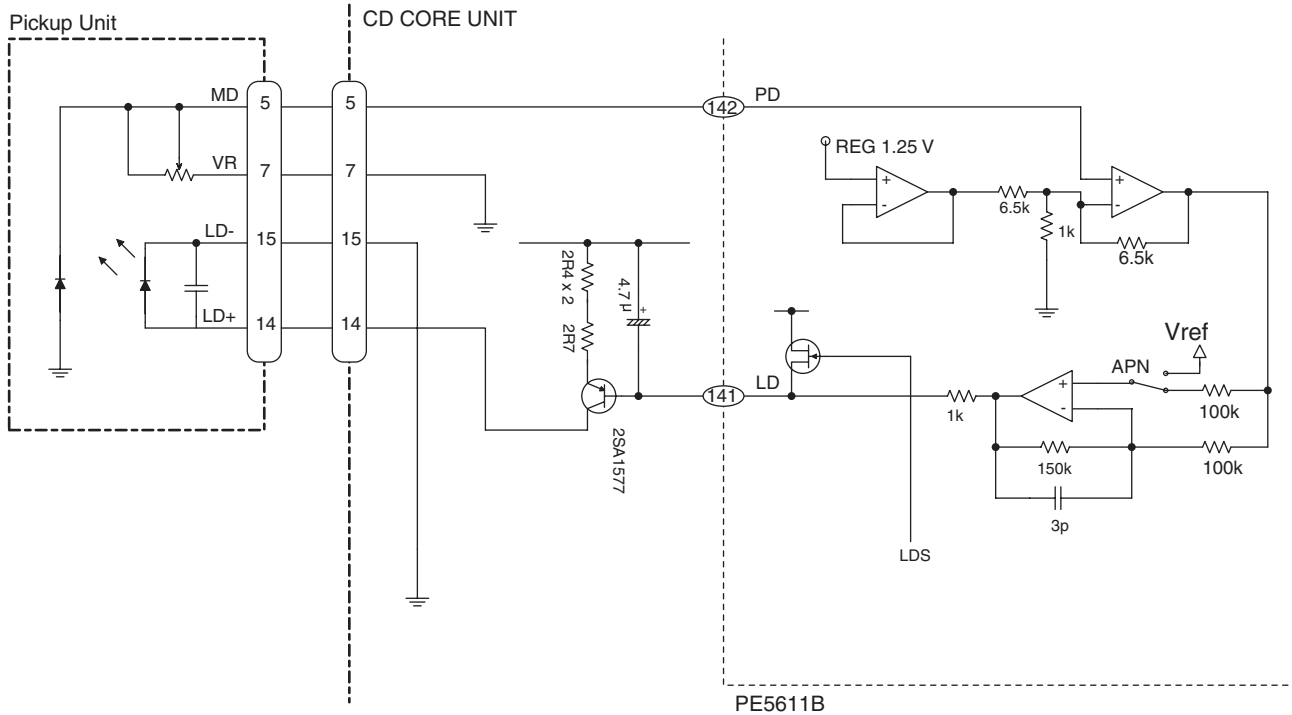


Fig.1.1.1 APC

1.1.2 RF and RFAGC amplifiers

The output from the photo-detector (A + C) and (B + D) is provided from the RFO terminal as the RF signal (which can be used for eye-pattern check), after it is added, amplified, and equalized inside this LSI. The low frequency component of the voltage RFO is calculated as below.

$$RFO = (A + B + C + D) \times 2$$

The RFO is used for the FOK generation circuit and RF offset adjustment circuit.

The RFO signal, output from the pin 122, is A/C-coupled externally, input to the pin 121, and amplified in the RFAGC amplifier to obtain the RFAGC signal.

Also, this LSI is equipped with the RFAGC auto-adjustment function, explained below, which switches feedback gains of the RFAGC amplifier so that the RFO output will be 1.5 V.

This RFO signal is also used for the EFM, DFCT, MIRR, and RFAGC auto-adjustment circuits.

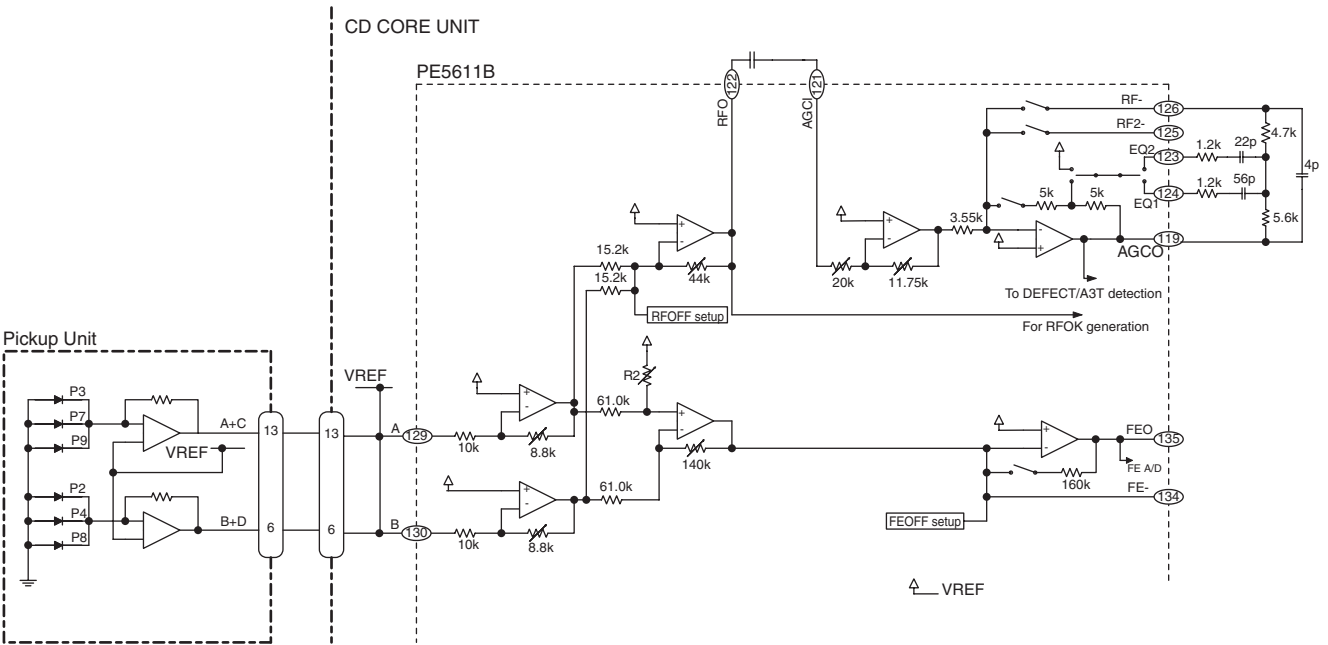


Fig.1.1.2 RF/AGC/FE

1.1.3 Focus error amplifier

The photo-detector outputs (A + C) and (B + D) are passed through the differential amplifier and the error amplifier, and (A + C - B - D) is provided from the pin 135 as the FE signal. The low frequency component of the voltage FE is calculated as below.

$$\begin{aligned} FE &= (A + C - B - D) \times 8.8k / 10k \times 111k / 61k \times 160k / 72k \\ &= (A + C - B - D) \times 3.5 \end{aligned}$$

For the FE outputs, an S-shaped curve of 1.5 Vp-p is obtained with the REFO as the reference. The cutoff frequency for the subsequent stage amplifiers is 14.6 kHz.

1.1.4 RFOK circuit

This circuit generates the RFOK signal, which indicates the timing to close the focus loop and focus-close status during the play mode, from the pin 70. As for the signal, "H" is output in closing the focus loop and during the play mode.

Additionally, the RFOK becomes "H" even in a non-pit area, since the DC level of the RFO signal is peak-held in the subsequent digital block and compared at a certain threshold level to generate the RFOK signal. Therefore, the focus is closed even on a mirror-surface area of a disc. This signal is also supplied to the microcomputer via the low-pass filter as the FOK signal, which is used for protection and gain switching of the RF amplifier.

1.1.5 Tracking error amplifier

The photo-detector outputs E and F are passed through the differential amplifier and the error amplifier to obtain (E - F), and then provided from the pin 138 as the TE signal. The low frequency component of the voltage TE is calculated as below.

$$\begin{aligned} TEO &= (E - F) \times 63k / 112k \times 160k / 160k \times 181k / 45.4k \times 160k / 80k \\ &= (E - F) \times 4.48 \end{aligned}$$

For the TE output, TE waveform of about 1.3 Vp-p with the REFO as the reference. The cutoff frequency in the subsequent is 21.1 kHz.

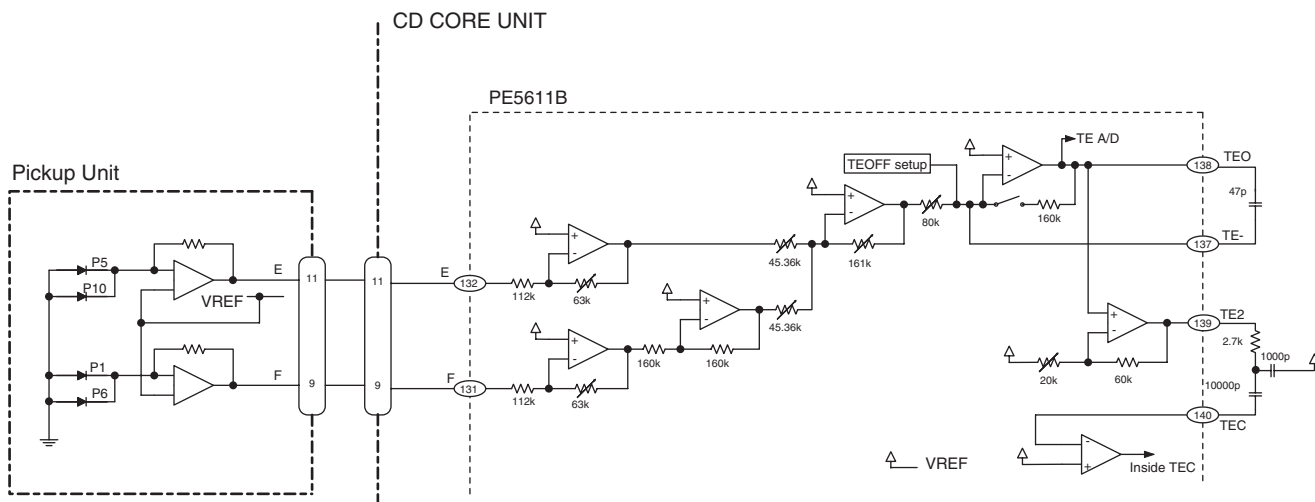


Fig.1.1.3 TE

1.1.6 Tracking zero-cross amplifier

The tracking zero-cross signal (hereinafter referred to as TEC signal) is obtained by amplifying the TE signal by fourfold, and used to detect the tracking-error zero-cross point. As the purpose of detecting the zero-cross point, the following two points can be named:

1. To use for track-counting in the carriage move and track jump modes
2. To use for detecting the direction in which the lens moves in tracking close. (Used in the tracking brake circuit to be explained later.)

The frequency range of the TEC signal is from 300 Hz to 20 kHz, and

TEC voltage = TE level x 4

The TEC level can be calculated at 4.62 V, which, at this level, exceeds the D range of the operational amplifier, and clips the signal, but, because the CD LSI only uses the signal at the zero-cross point, it poses no particular problem.

1.1.7 EFM circuit

The EFM circuit converts the RF signal into digital signals of 0 and 1. The AGCO signal output from the pin 119 is A/C-coupled externally, input to the pin 118, and supplied to the EFM circuit.

Missing RF signal due to scratches and stains on the disc, and asymmetry of the upper and lower parts of the RF, caused by variation in disc production, cannot be entirely eliminated in AC coupling process, the reference voltage ASY of the EFM comparator is controlled, using the probability that 0 and 1 occur at 50%. Thus, the comparator level will always stay around the center of the RFO signal. This reference voltage ASY is generated by passing the EFM comparator output through the low-pass filter. The EFM signal is output from the pin 113.

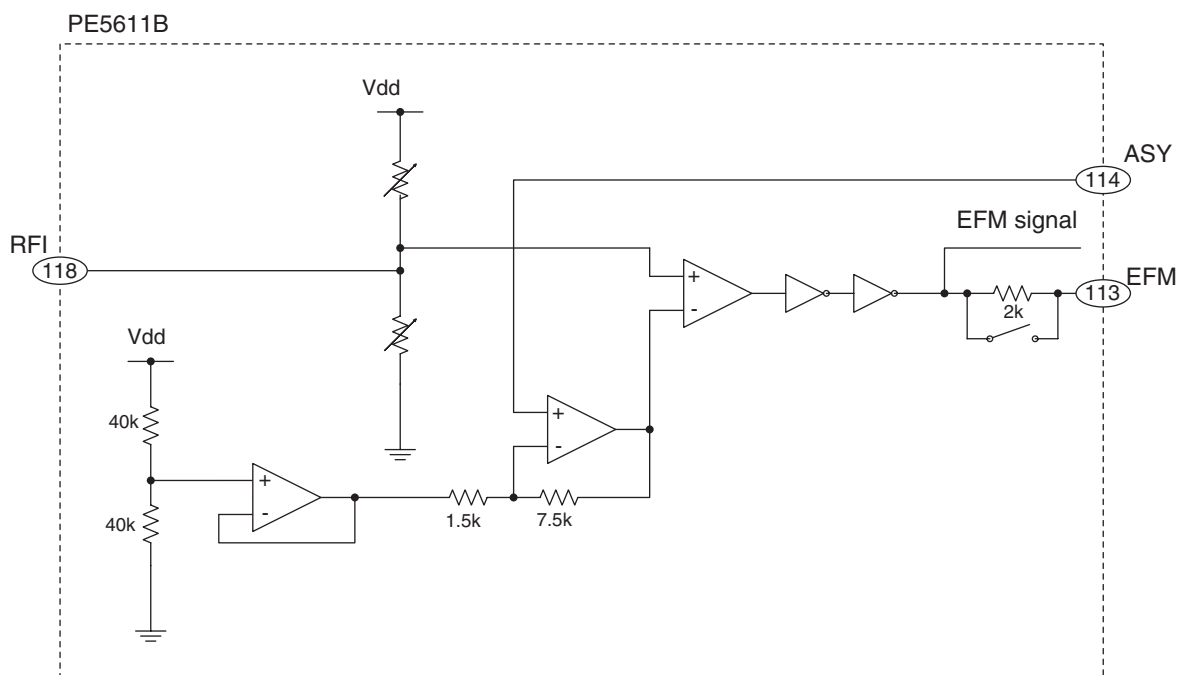


Fig.1.1.4 EFM

1.2 SERVO BLOCK (PE5611B: IC201)

The servo block performs servo control such as error signal equalizing, in-focus, track jump and carriage move. The DSP block is the signal-processing unit, where data decoding, error correction, and compensation are performed. The FE and TE signals, generated in the preamplifier stage, are A/D-converted, and output drive signals for the focus, tracking, and carriage systems via the servo block. Also, the EFM signal is decoded in the signal-processing unit, and ends up in outputting D/A-converted audio signals through the D/A converter. Furthermore, in this decoding process, the spindle servo error signal is generated, supplied to the spindle servo block, and used to output the spindle drive signal.

Each drive signal for focus, tracking, carriage, and spindle servos (FD, TD, SD, and MD) are output as PWM3 data, and then converted to analog data through the LPF. These drive signals, after changed to analog form, can be monitored with the FIN, TIN, CIN, and SIN signals, respectively. Subsequently, the signals are amplified and supplied to the actuator and motor for each signal.

1.2.1 Focus servo system

The main equalizer of the focus servo consists of the digital equalizer block. The figure 1.2.1 shows the block diagram of the focus servo system.

In the focus servo system, it is necessary to move the lens within the in-focus range in order to close the focus loop. For that purpose, the in-focus point is looked for by moving the lens up and down with the focus search voltage of triangular signal. During this time, the rotation of the spindle motor is retained at a certain set speed by kicking the spindle motor.

The servo LSI monitors the FE and RFOK signals and automatically performs the focus-close operations at an appropriate timing. The focus-close operation is performed when the following three conditions are satisfied at the same time:

- 1) The lens moves toward the disc surface.
- 2) RFOK = "H"
- 3) The FE signal is zero-crossed.

Consequently, the FE converges to "0" (= REFO).

When the above-mentioned conditions are met and the focus loop is closed, the FSS bit is shifted from "H" to "L," and then, in 10 ms, the CPU of the LSI starts monitoring the RFOK signal obtained through the low-pass filter.

If the RFOK signal is determined to be "L," the CPU of the LSI takes several actions including protection.

Fig.1.2.2 shows a series of actions concerning the focus close operations. (It shows a case where the focus loop cannot be closed.)

With the focus mode selector displaying 01 in the test mode, pressing the focus close button, allows to check the S-shaped curve, search voltage, and actual lens behavior.

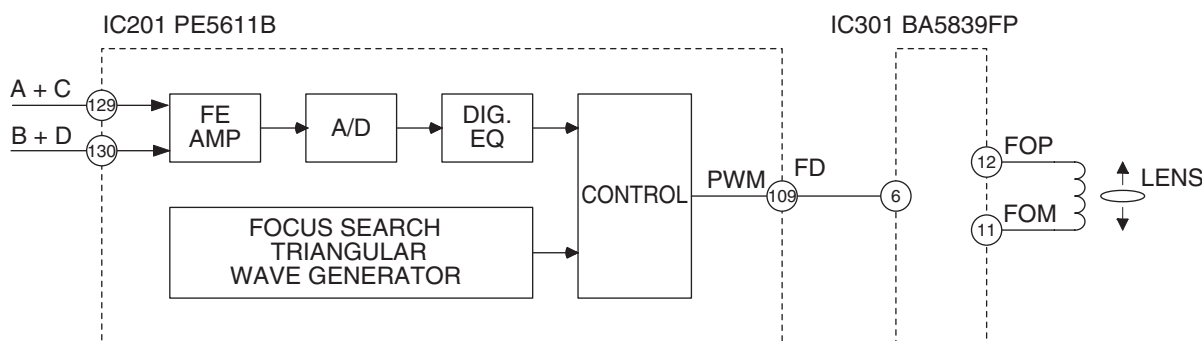


Fig.1.2.1 Block diagram of the focus servo system

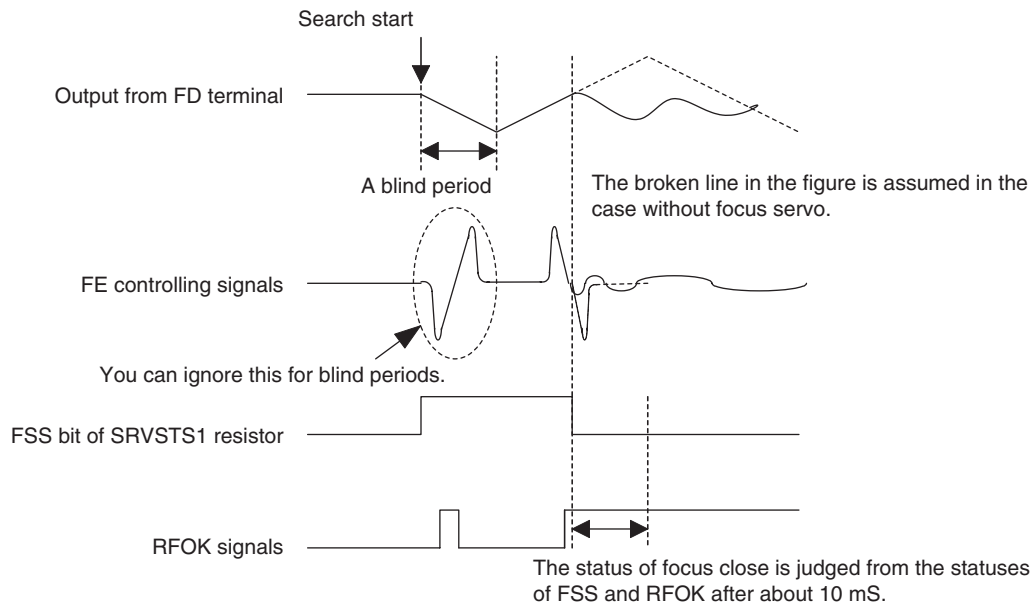


Fig.1.2.2 Timing chart for focus close operations

1.2.2 Tracking servo system

The main equalizer of the tracking servo consists of the digital equalizer block. The figure 1.2.3 shows the block diagram of the tracking servo system.

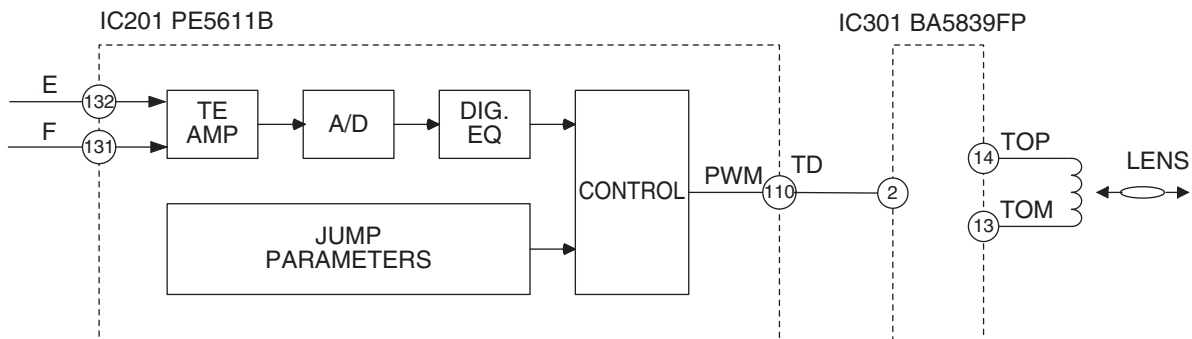


Fig.1.2.3 Block diagram of the tracking servo system

(a) The track jump operation is automatically performed by the auto-sequence function inside the LSI with a command from the CPU of the LSI. For the track jumps used in the search mode, a single track jump and four to 100 multi-track jump are available in this system. In the test mode, out of these track jumps, 1, 32, and 32 * 3 track jumps, as well as carriage move can be performed and checked in mode selection. In a track jump, the CPU of the LSI sets about half the number of the total tracks to jump (about five tracks for a 10-track jump), and the set number of tracks are counted using the TEC signal. By outputting the brake pulse for a certain period of time (set by the CPU of the LSI) from the time the set number is counted, and stopping the lens, the tracking loop can be closed so that the normal play can be continued.

Also, in order to facilitate closing of the tracking loop in a track jump, the brake circuit is kept ON for 50 msec, after the brake pulse is stopped, for increasing the tracking servo gain. The FF/REW action in the normal operation mode is realized by performing single jumps consecutively. The speed is approximately 10 times faster than in the normal mode.

(b) Brake circuit

Since the servo loop is not closed very well in the setup mode and track jump mode, the brake circuit is used for stabilizing the servo-loop close operation. The brake circuit detects the direction in which the lens moves, and outputs only the drive signal for the direction opposite to the movement to slow down the lens, thereby stabilizing the tracking servo-loop close operation. Additionally, the off-track direction is determined from the TEC and MIRR signals, as well as their phase relation.

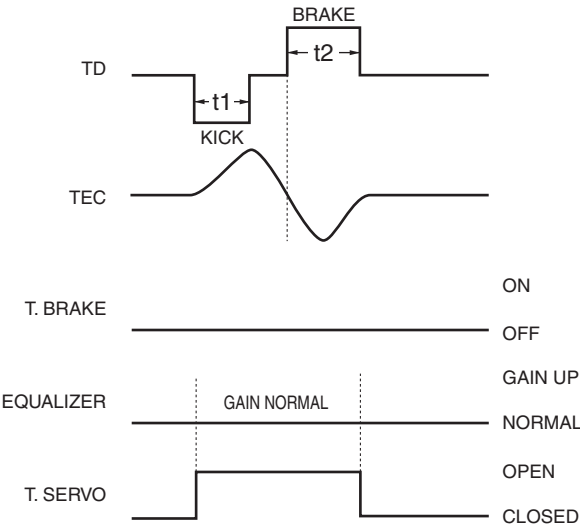


Fig.1.2.4 Single-track jump

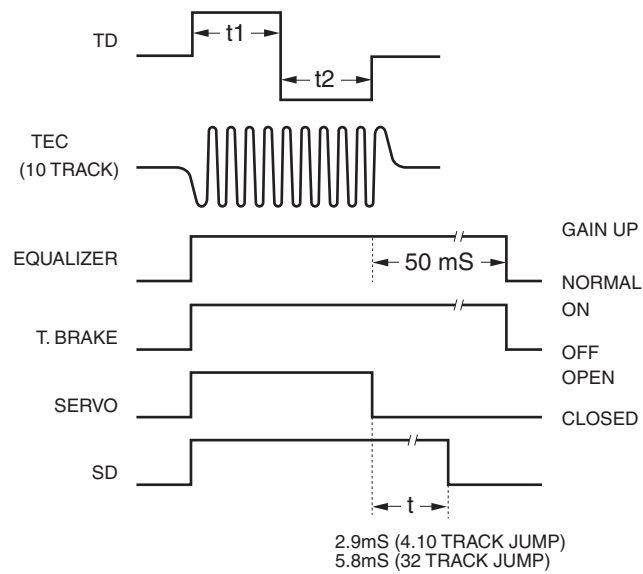
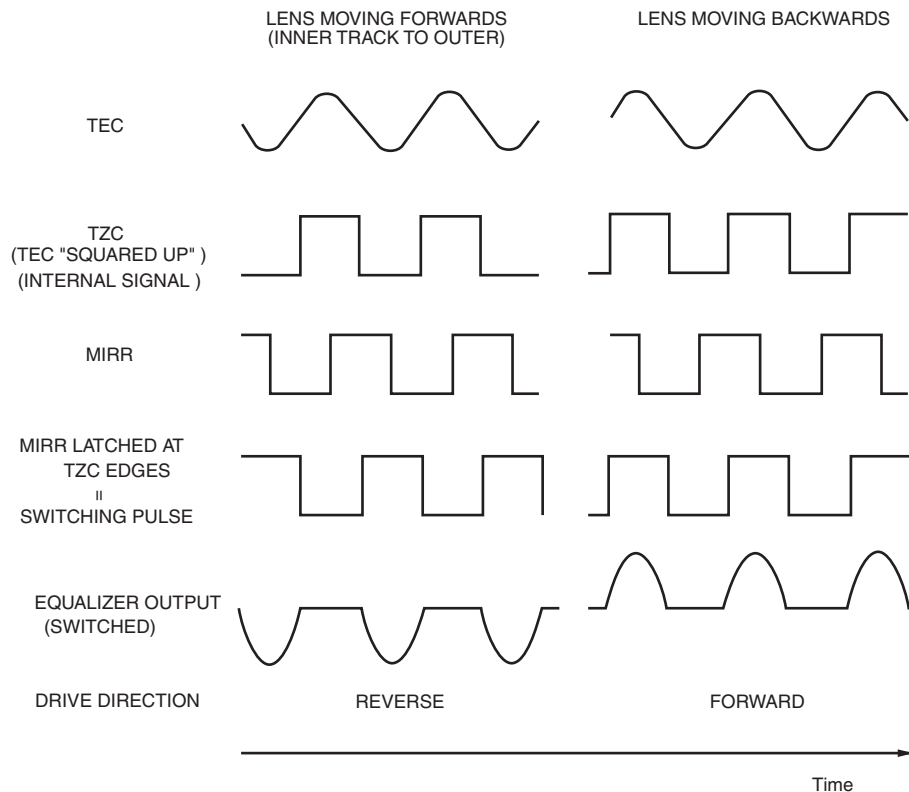


Fig.1.2.5 Multi-track jump



Note : Equalizer output assumed to have same phase as TEC.

Fig.1.2.6 Track brake

1.2.3 Carriage servo system

The carriage servo system inputs the output of the low frequency component from the tracking equalizer (information on the lens position) to the carriage equalizer, and, after the gain is increased to a certain level, outputs the drive signal from the CD of the LSI. This signal is applied to the carriage motor via the driver IC.

Specifically, since it is necessary to move the whole pickup to the FORWARD direction when the lens offset reaches a certain level during the play mode, the equalizer gain is set to output higher voltage than the carriage motor starting voltage at this time. In actual operations, a certain threshold level is preset in the servo LSI for the equalizer output, and only when it exceeds the threshold level, the drive voltage will be output. This can reduce the power consumption. Also, before the whole pickup starts moving, the equalizer output voltage may exceed the threshold level a few times, due to such causes as eccentricity of discs. In this case, the output waveform of the drive voltage from the LSI assumes a pulse-like form.

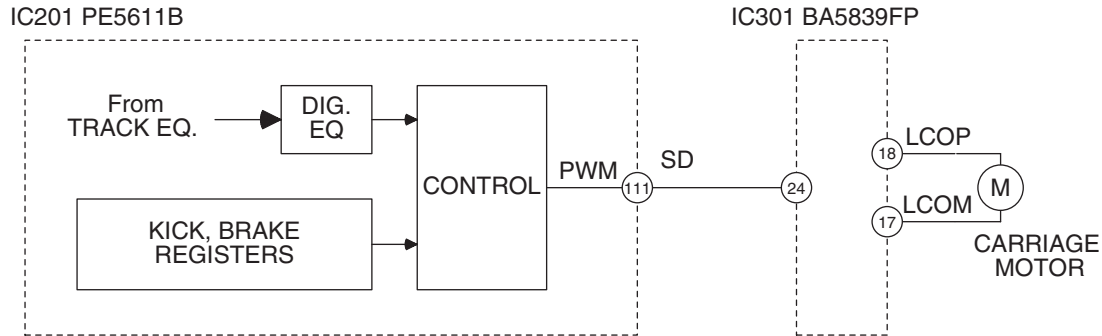


Fig.1.2.7 Block diagram for the carriage servo block

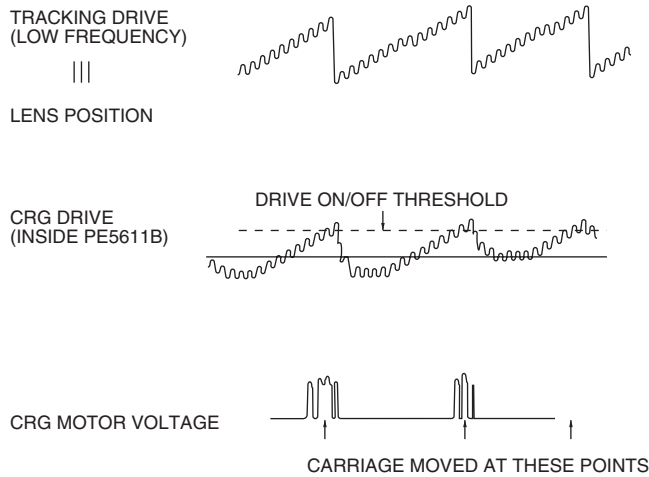


Fig.1.2.8 Waveforms of the carriage signal

1.2.4 Spindle servo system

In the spindle servo system, the following modes are available:

1) Kick

Used to accelerate the disc rotation in the setup mode.

2) Offset

a. Used in the setup mode after the kick mode, until the TBAL adjustment is completed.

b. Used during the play mode when the focus loop is unlocked, until it is locked again.

In both cases, the mode is used to keep the disc rotation approximately normal.

3) Applicable servo

CLV servo mode, used in the normal operation.

In the EFM demodulation block, by WFCK/16 sampling whether the frame sync signal and the internal frame counter output are synchronized, a signal is created to show if they are "in-sync" or "non-sync." The status is not recognized as asynchronous until the signal is "non-sync" for eight consecutive times; otherwise it is recognized as synchronous. In the applicable servo mode, the leading-in servo mode is automatically selected in the asynchronous status, and the normal servo mode in the synchronous status.

4) Brake

Used to stop the spindle motor.

In accordance with the CPU of the LSI command, the brake voltage is sent out from the servo LSI. At this time, the EFM waveform is monitored inside the CD of the LSI, and when the longest EFM pattern exceeds a certain interval (or the rotation slows down enough), a flag is set inside the CD of the LSI, and the CPU of the LSI switches off the brake voltage. If a flag is not set within a certain period, the CPU of the LSI shifts the mode from the brake mode to the stop mode, and retains the mode for a certain period of time. If the mode switches to this stop mode in the eject operation, the disc will be ejected after the period of time mentioned above elapses.

5) Stop

Used when the power is turned on and during the eject operation. In the stop mode, the voltage in both ends of the spindle motor is 0 V.

6) Rough servo

Used in carriage feed (carriage move mode such as long search).

By obtaining the linear velocity from the EFM waveform, the "H" or "L" level is input to the spindle equalizer. In the test mode, this mode is also used for grating confirmation.

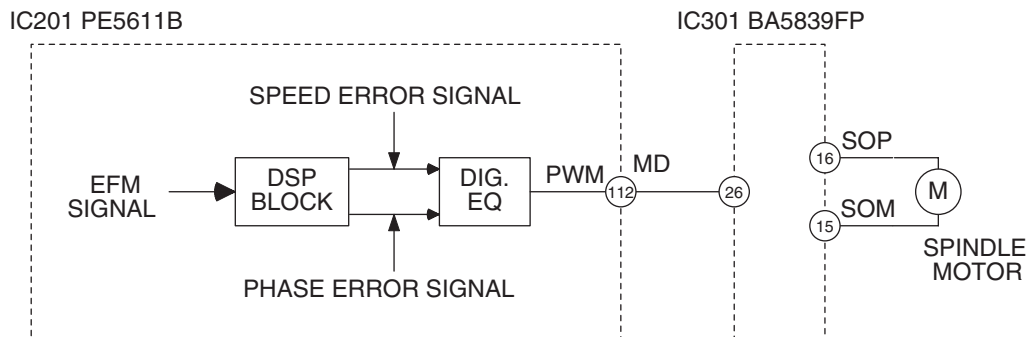


Fig.1.2.9 Block diagram of the spindle servo system

1.3 AUTOMATIC ADJUSTMENT FUNCTION

In this system, all the circuit adjustments are automated inside the CD of the LSI.

All adjustments are performed whenever a disc is inserted or the CD mode is selected by pressing the source key.

Details of each adjustment will be explained below.

1.3.1 TE, FE, and RF offset auto-adjustment

In this adjustment the TE, FE, and RF amplifier offsets of the preamplifier block in POWER ON are adjusted to the respective target values with the REFO as reference. (The target values for TE, FE, and RF offsets are 0 V, 0 V, and - 0.8 V, respectively.)

Adjusting procedure

1) The CPU of the LSI reads respective offsets through the CD of the LSI, when they are in LDOFF status.

2) The CPU of the LSI calculates the voltages for correction from the values read in 1), and substitutes the corrected values to prescribed places to adjust.

1.3.2 Tracking balance (T.BAL) auto-adjustment

This adjustment equalizes the output difference of the E-ch and F-ch from the pickup by changing the amplifier gain inside the CD of the LSI. In actual operation, adjustment is performed so that the TE waveform becomes symmetrical on each side of the REFO.

Adjusting procedure

1) After closing the focus loop,

2) Kick the lens in the radial direction to ensure the generation of the TE waveform.

3) The CPU of the LSI reads the offset amount of the TE signal calculated in the LSI at the time through the CD of the LSI.

4) The CPU of the LSI determines the offset amount is 0, positive, or negative.

- When the offset amount is 0, the adjustment is completed.

- When the offset amount is positive or negative, the amp gains for E-ch and F-ch should be changed, following a certain rule.

Then, steps 2) to 4) are repeated until the offset amount becomes 0 or the repetition reaches the limit number of times.

1.3.3 FE bias auto-adjustment

This adjustment is to maximize the RFO level by optimizing the focus point during the play mode, utilizing the phase difference between the 3T level waveform of the RF waveform and that of when focus error disturbance is input. This adjustment is performed at the same timing as the auto-gain control, which will be described later, since disturbance is input to the focus loop.

Adjusting procedure

1) The CPU of the LSI issues the command to introduce disturbance to the focus loop (inside the CD of the servo LSI).

2) The waver of the 3T component of the RF signal is detected in the CD of the LSI.

3) The relation between the 3T component above and the disturbance is processed inside the CD of the LSI to detect the volume and direction of the focus offset.

4) The CPU of the LSI issues a command and reads out the detected results from the CD of the LSI.

5) The CPU of the LSI calculates the necessary correction and substitutes the result to the bias adjustment term inside the CD of the LSI.

Additionally, in this adjusting, a series of steps are repeated for better adjustment accuracy, the same as in the auto-gain control.

1.3.4 Focus and tracking AGC

This adjustment is to automatically adjust the focus and tracking servo loop gains.

Adjusting procedure

- 1) Introduce disturbance to the servo loop.
- 2) The error signals (FE and TE) when disturbance is introduced are extracted through the band pass filter, to obtain the G1 and G2 signals.
- 3) The CPU of the LSI reads the G1 and G2 signals through the CD of the LSI.
- 4) The CPU of the LSI calculates the necessary correction and performs the loop gain adjustment inside the CD of the LSI.

For increased adjustment accuracy, the same adjustment process is repeated a few times.

1.3.5 RF level auto-adjustment (RFAGC)

This adjustment is to adjust the dispersion of the RF level (RFO), which may be caused by mechanism or disc-related factors, to a steady value for reliable signal transmission. The adjustment is performed by changing the amp gain between RFO and RFAGC.

Adjusting procedure

- 1) The CPU of the LSI issues a command and reads out the output from the RF level detection circuit inside the CD of the LSI.
- 2) From the read values, the CPU of the LSI calculates the amp gain to change the RFO level to the target.
- 3) The CPU of the LSI sends a command to the CD of the LSI to adjust the amp gain to the level calculated in 2).

This adjustment is performed

- 1) when only the focus close operation is completed during the setup mode, and
- 2) immediately before the setup is completed (or when the play mode is about to start).

1.3.6 Adjustment of gains in preamplifier stage

In this adjustment, when reflected beams from the disc surface are extremely weak, such as when the lens is dirty, or a CD-RW is played, gains in the whole RFAMP block (FE, TE, and RF amplifiers) are increased by + 6 dB or + 12 dB, depending on the situation.

Adjusting procedure

When the system determines that the reflected beams from the disc surface are extremely weak during the setup mode, the whole RFAMP gains will be increased by + 6 dB or + 12 dB.

1.3.7 Initial values in adjustment

All automatic adjustments immediately after inserting a disc are performed based on the initial values. Automatic adjustments by source change or ACC ON are basically performed using the previous adjustment values as the initial values.

1.3.8 Coefficient display of adjustment results

For some of the adjustments (FE and RF offset, FZD cancel, F and T gains, and RFAGC), the adjustment results can be displayed and confirmed in the test mode.

A The coefficient display in each auto adjustment is as follows:

1) FE and RF offset

Reference value = 32 (coefficient of 32 indicates that no adjustment is required)

The value is displayed in the unit of approximately 32 mV.

Ex. When the FE offset coefficient is 35,

$35 - 32 = 3 \times 32 \text{ mV} = 96 \text{ mV}$

The correction is about +96 mV, which means the FE offset before adjustment is - 96 mV.

2) F and T gain adjustment

Reference value for focus and tracking = 20

B The displayed coefficient / the reference value indicates the adjusted gain.

Ex. When the AGC coefficient is 40,

adjustment of $40 / 20 = 2$ times (+ 6 dB) has been performed.

(It means that the original loop gain was half the target, and the whole gain was doubled to obtain the target value.)

3) RF level adjustment (RFAGC)

Reference value = 8

The coefficient of 9 to 15 indicates to increase the RF level

(for more gains).

The coefficient of 7 to 10 indicates to decrease the RF level

(for less gains).

C When the coefficient changes by 1, the gain changes by 0.7 to 1 dB.

When the coefficient is 15, the gain is the maximum at TYP + 7.9 dB.

When the coefficient is 0, the gain is the minimum at TYP - 4.6 dB.

D

E

F

1.4 POWER SUPPLY AND LOADING BLOCK

For the power supply for this system, the VD (7.5 ± 0.5 V) and the VDD (3.3 ± 0.165 V), which are supplied from the motherboard, are used. The two power supplies, the VD mentioned above (for the drive system), and the VDD (for the LSI: 3.3 V), are used in this system.

The CPU of the LSI controls ON/OFF with "CONT", except for Load/Eject of the CD driver. For ON/OFF of the Loading drive, no particular control terminals are available, but the input signal "LOEJ" assumes an equivalent role. Also, the LCO output switches LOADING MODE and CARRIAGE MODE with "CLCONT".

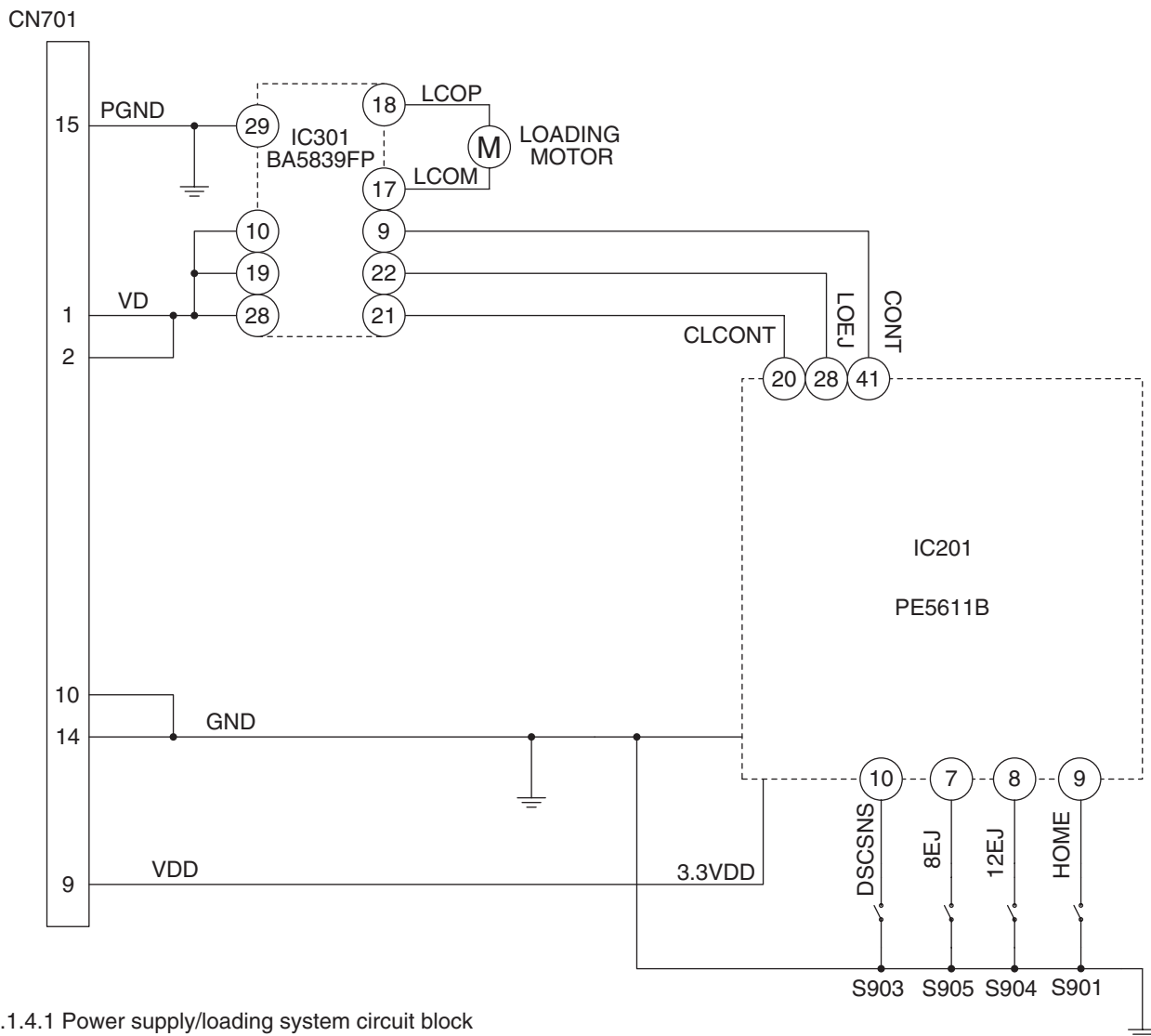


Fig.1.4.1 Power supply/loading system circuit block

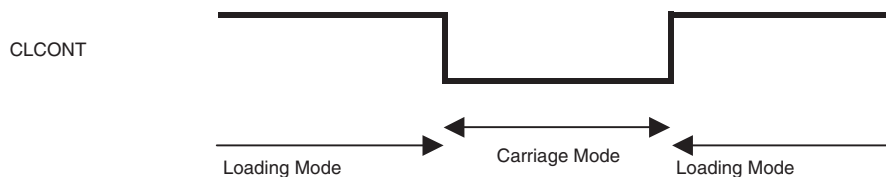


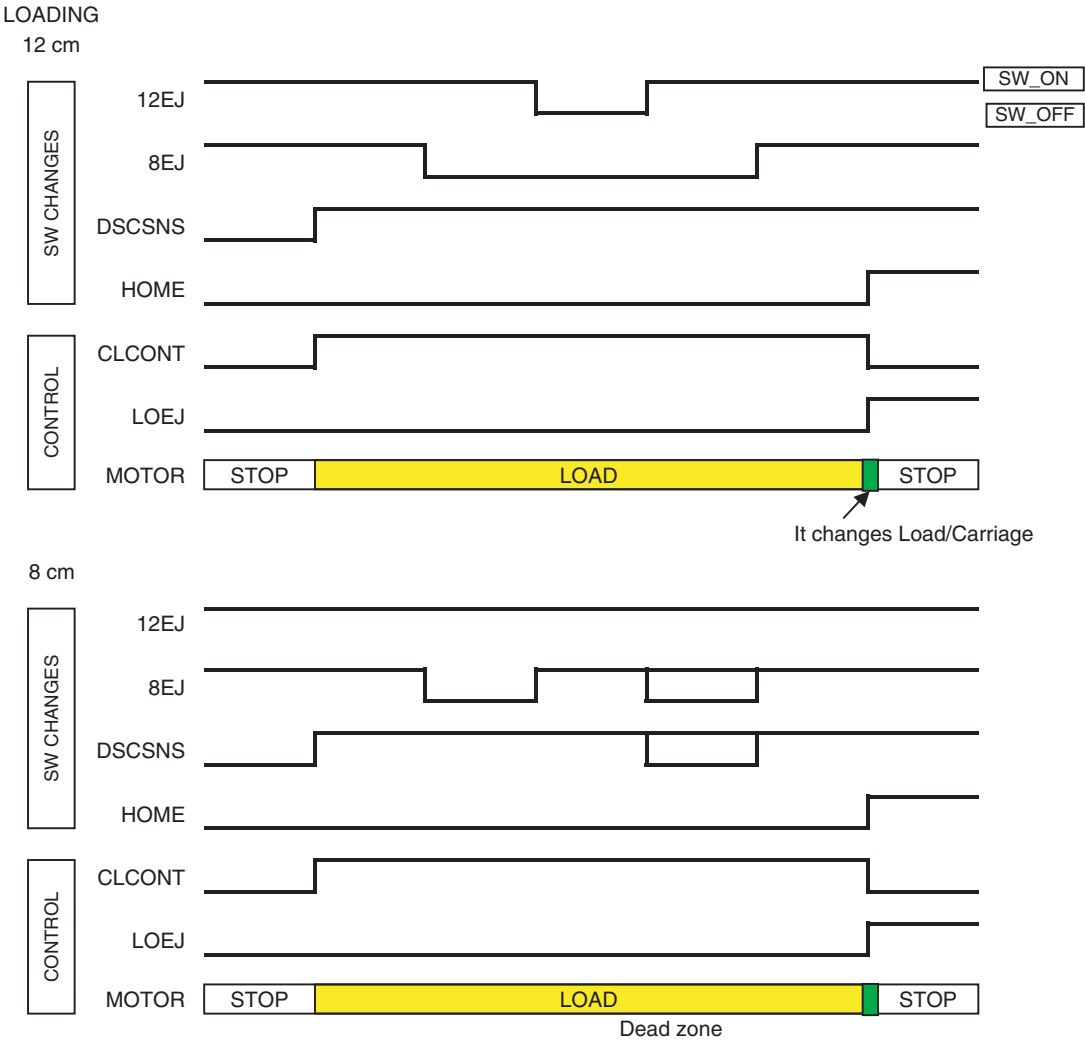
Fig.1.4.2 Loading/carriage mode shift

The load/eject operation is controlled with the status changes of the HOME switch (also used for clamp detection) on the mechanism unit and the three switches on the control unit. The ON/OFF statuses of these switches are respectively detected at the input port of the microcomputer.

Using the detection results in the microcomputer, each status (A to E) is determined. The disc size detection (8 or 12 cm) is also performed through this status change. Each status is shown in Fig.1.4.3 and the status change in Fig.1.4.4.

Status	A	B	C	D	E
DSCSNS	OFF	ON	ON	ON	ON
8SW	ON	ON	OFF	OFF	ON
12SW	ON	ON	ON	OFF	ON
HOME	OFF	OFF	OFF	OFF	ON
Mechanism state	With no disc	-	-	-	Clamp state

Fig.1.4.3 DSCSNS status



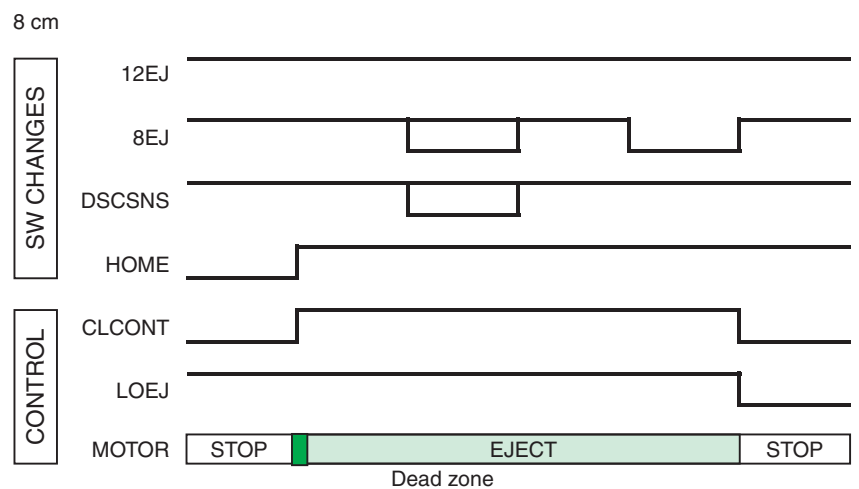
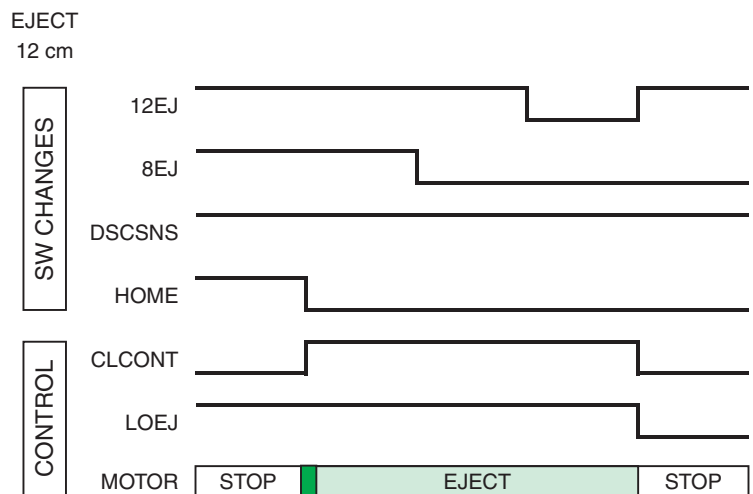


Fig.1.4.4 Status change in LOAD and EJECT modes

1.5 USB BLOCK

1.5.1 Outline

This product has a built-in USB2.0FS host controller and reads the compressed audio data from USB memory, portable device (MSC) or iPod.

The read data is transmitted to the LSI CPU block via the bus bridge connected to the USB host and serial interface and then to the LSI CD block.

1.5.2 Block diagram of USB functions

The USB host controller implements control from the PCI bridge in bus bridge via the PCI bus.

Compressed audio data of Mass Storage class is loaded into the bus bridge in Bulk transfer from USB device using DP (USB data +) and DM (USB data -).

The bus bridge controls by microcontroller serial transfer, universal port and external interrupt.

Compressed audio data received in serial transfer is transferred to the audio DSP in LSI CD block via the LSI CPU block and is reproduced.

The functions of the USB host controller and bus bridge are described as follows:

[USB host controller]

- Loads the compressed audio data from the USB device connected to the USB connector.
- OpenHCI Specification Release 1.0a compliant
- Supports Full-Speed (12 Mbps) USB devices.
- Supports Mass Storage class and Bulk transfer.
- System clock: 48 MHz (with clock oscillation stopping function)
- PCI clock: pclk = 27 MHz

[Bus bridge]

- Bridge circuit to connect between the USB host controller and LSI CPU block
- Decodes the serial data and converts it for PCI bus.
- Converts the data from PCI bus to serial data.
- Transfers directly to the RAM in USB_HOST bridge.
- PCI clock: pclk = 27 MHz
- Serial clock: sclk = 8.467 MHz

The block diagram of USB functions are provided as follows:

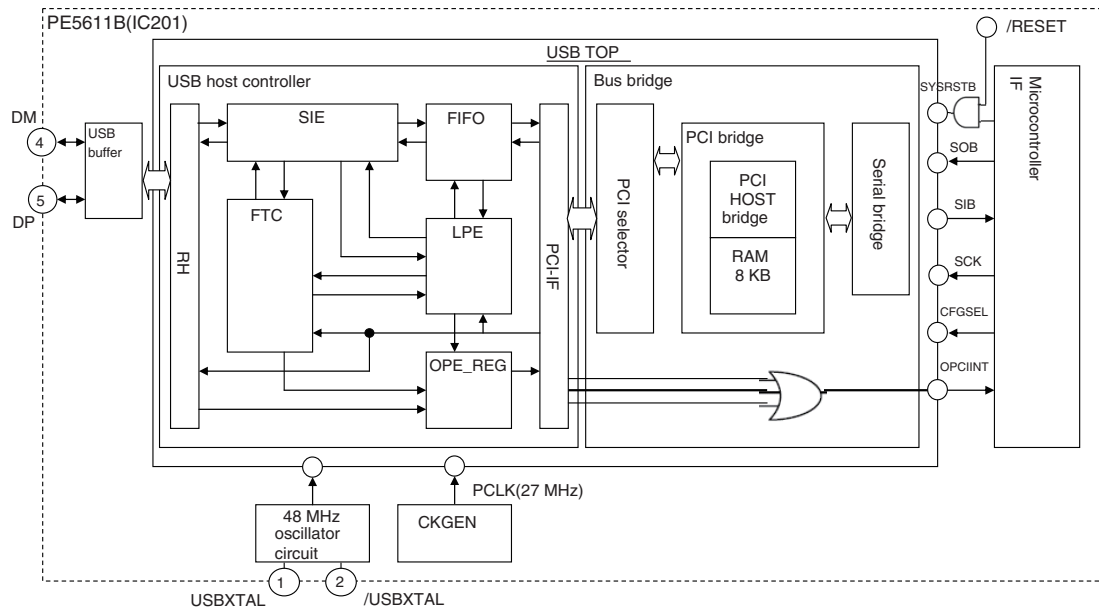


Fig.1.5.1 Block diagram of USB functions

[Description of block diagram of USB functions]

<USB host controller>

PCI_IF: Module for communication between the internal circuits of Host and PCI bus

FIFO: FIFO module for asynchronism absorption between the USB clock and PCI clock

LPE: Module to implement USB list processing

SIE: Module to implement serial-parallel and parallel-serial conversion, CRC processing and bit stuffing process on USB transfer data

FTC: Module to implement frame control for USB

RH: Module with the role of RootHub for USB. Implements USB buffer control.

<Bus bridge>

A circuit to connect between the serial I/F of LSI CPU block and USB host controller

Serial bridge: Module to connect between the microcontroller and PCI HOST bridge

PCI HOST bridge: Module to connect between the PCI bus, memory bus and RAM bus

RAM 8 KB: 8 KB SRAM module

PCI selector: Module to connect between the USB host and PCI bus

<Microcontroller I/F> LSI CPU block

SYSRSTB: Reset signal for USB host and bus bridge

SIB: Signal for bus bridge serial data output and microcontroller serial data input

SOB: Signal for bus bridge serial data input and microcontroller serial data output

SCKB: Serial clock signal for bus bridge. Microcontroller is the master.

OPCIINT: USB-related interrupt output from the bus bridge

CFGSEL: Register/RAM access switching signal

• CKGEN

Clock generator with multiplication PLL using the 16.934 4 MHz clock as the source

Generates 27 MHz clock by dividing the clock obtained by multiplying 16.934 4 MHz with 8 by 5.

• USB buffer

DP and DM buffer used in USB communication

• 48 MHz oscillation circuit

The block that oscillates 48 MHz clock for the USB clock

1.5.3 Flow for audio output from the USB device

When a USB device is connected to the USB connector, the LSI (host controller) recognizes the device.

The host controller load the compressed audio data from the USB device connected to the USB connector.

The loaded compressed audio data is stored in the RAM on Bus Bridge.

The stored compressed audio data is loaded on LSI CPU block by serial transfer.

The compressed audio data by serial reception from CSI is transferred to the Buffer Controller in LSI CD block via LSI CPU block.

The data is stored in the built-in 1 Mbit SRAM by RAMPNT and is transferred to Audio DSP by PLYPNT.

The compressed audio data is decoded for each audio data and output to DAC I/F as audio data.

The digital audio data input from DAC I/F into Audio DAC is output as analog audio data.

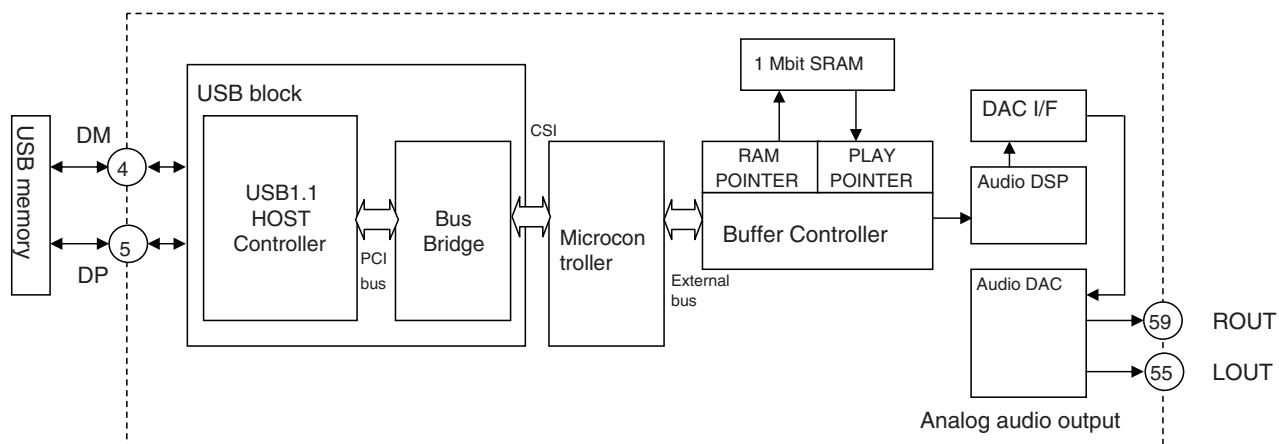


Fig.1.5.2 Flow for audio output from the USB device

1.6 ABOUT iPod FUNCTIONS(iPod MODELS ONLY)

1.6.1 Outline

Unlike MSC devices, iPod executes all operations including PLAY/FF/REV and decoding of compressed file internally. Digital audio data is transmitted to the mechanism through the USB block of LSI.

The mechanism will operate iPod by transmitting commands to iPod instead of file reproduction process and so forth. Therefore the reproducible format and functions need to be compliant with iPod.

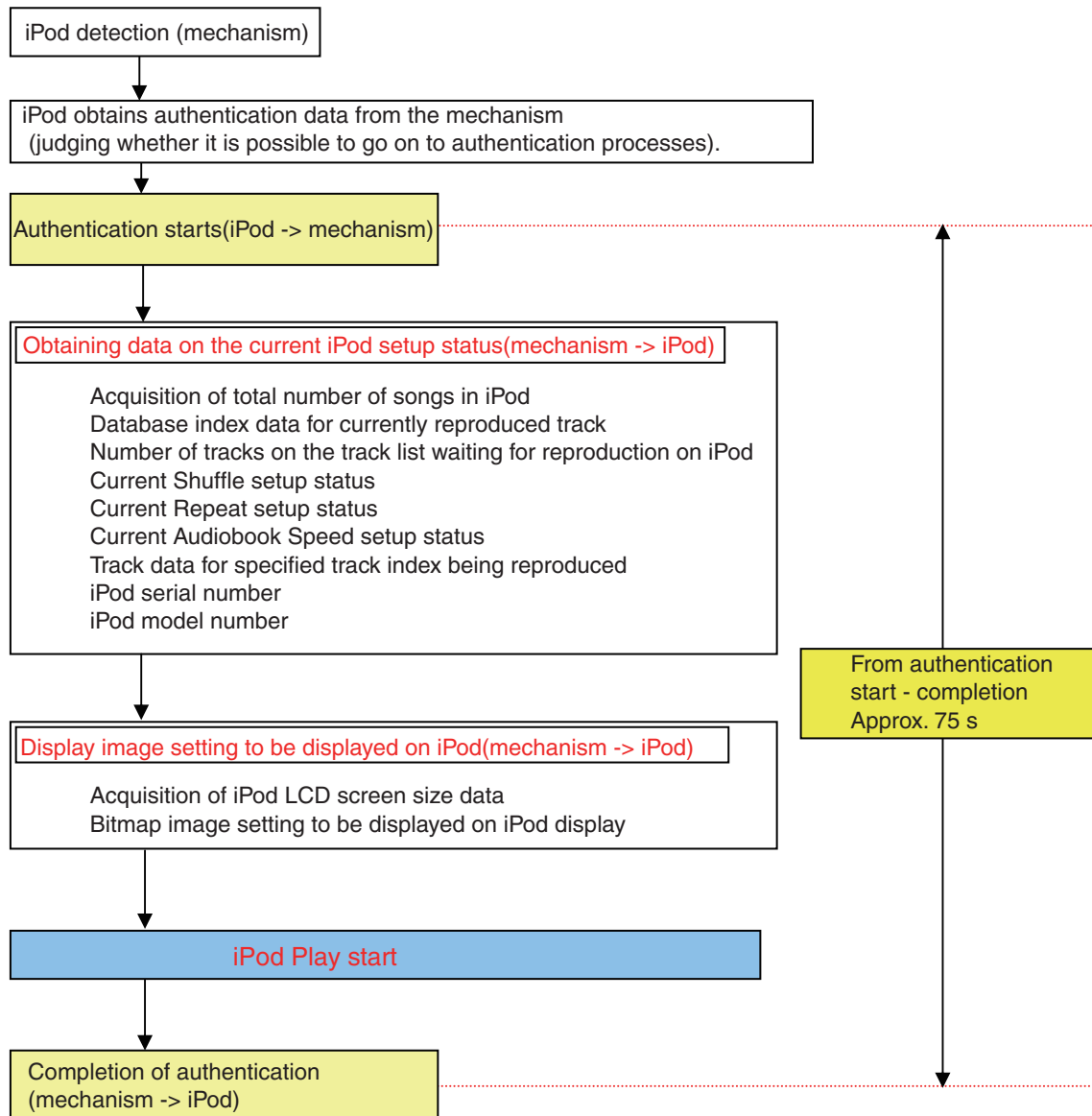
In addition, digital streaming may be impossible depending on the iPod generation and the firmware version. These devices are handled as noncompliant devices and are not played.

iPod does not use the concept of folder configuration but access the category database.

1.6.2 iPod authentication flow

The flow from iPod detection to completion of authentication is shown as follows:

Flow for iPod detection - completion of authentication (authentication IC 2.0A)



The status during iPod authentication is also provided as follows:

Authentication status when iPod is inserted

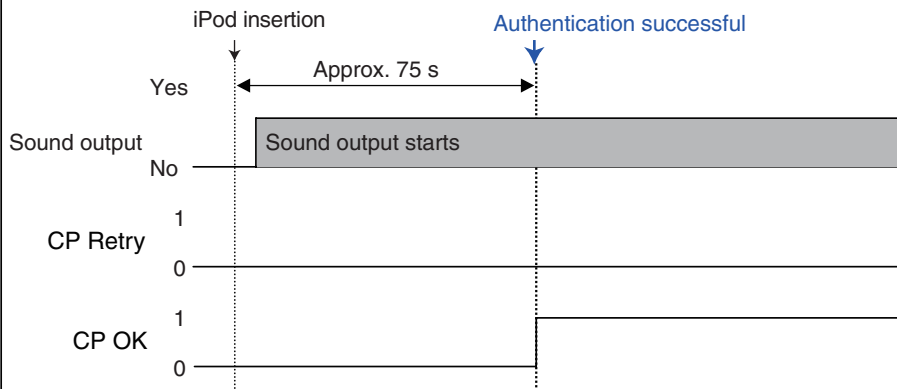
When iPod is inserted, authentication operation is executed between the CD mechanism (mounted with iPod authentication IC) and iPod.

Operation (status) by the CD mechanism and iPod in this case are shown as follows:

[When authentication is OK]

When authentication is successful in 1 try, sound output is continued (authentication OK).

When authentication fails in the 1st try and is successful in the 2nd try, sound output is continued (authentication OK).



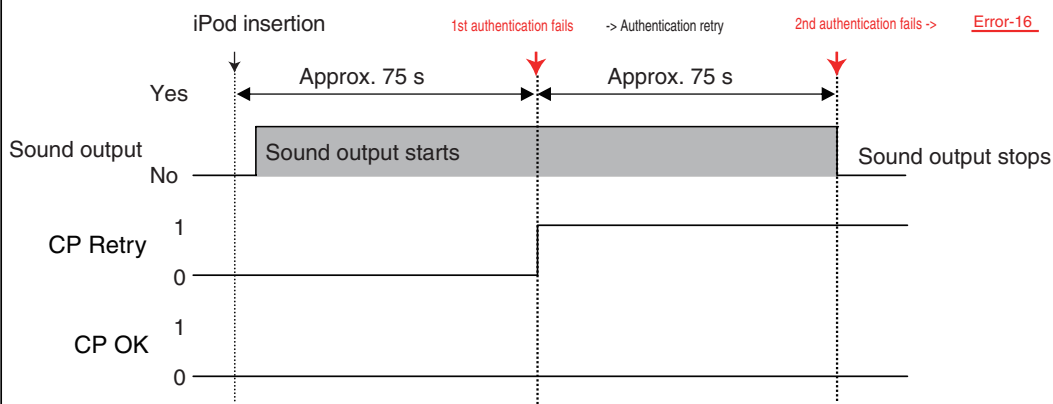
* CP OK bit is set to "1" when authentication is successful.

* Since authentication is successful, CP Retry remains "0."

[When authentication is NG]

When authentication fails in the 1st try, the second authentication operation starts.

When authentication fails again in the 2nd try, ERR-16 (iPod authentication error) occurs and sound output is stopped (authentication NG).



* When authentication retry starts, CP Retry bit is set to "1."

* Since authentication failed, CP Retry remains "0."

* Since authentication failed, Error-16 is generated and sound output is stopped.

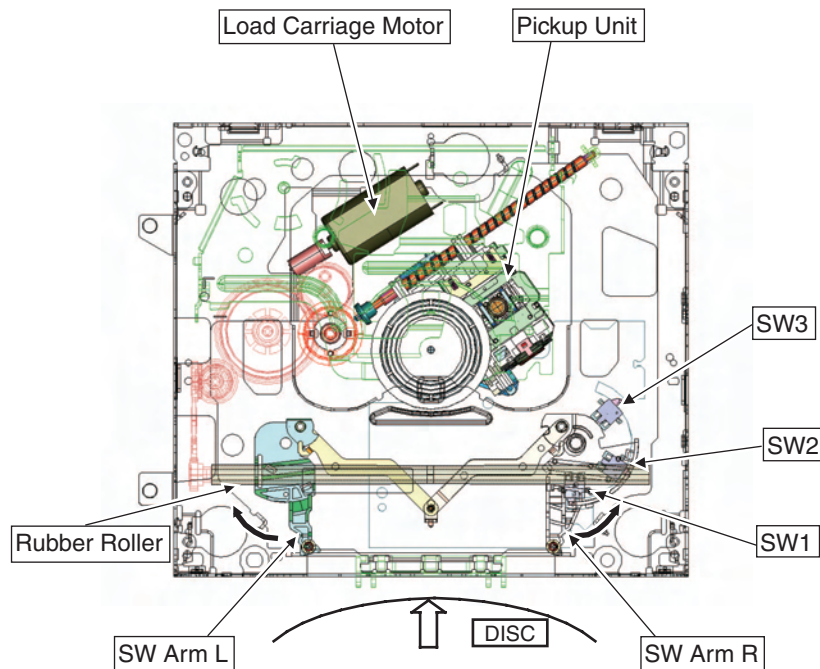
2. MECHANISM DESCRIPTIONS

● Loading actions

1. When a disc is inserted, SW Arm L and R rotate and SW1 is switched from ON to OFF.

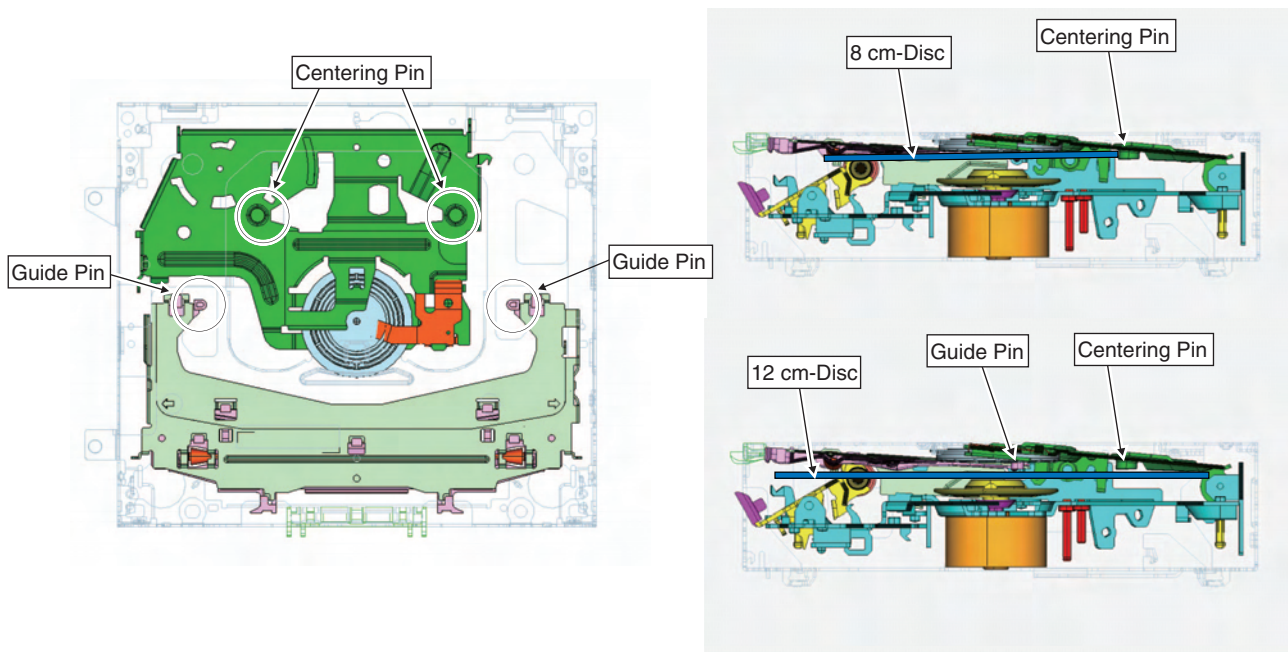
When SW1 is switched from ON to OFF, the Load Carriage Motor is started and the rubber roller rotates.

2. If the disc is a 12 cm-disc, SW3 is turned ON with SW Arm, and the microcomputer determines that the disc is a 12 cm-disc.
3. In case of an 8 cm-disc, SW3 is not turned ON, a clamp action is triggered, and the microcomputer determines that the disc is an 8 cm-disc.
(The left and right of SW Arm are coupled, and when only one side is pushed, the coupled joint will lock, and the arms will not open more than a certain width (SW3 will not be turned ON).)



● Disc centering mechanism

1. 8 cm-disc is centered by the Guide Pins and the Centering Pins.
2. 12 cm-disc passes under the Guide Pins and the Centering Pins, and centered in the back position of the mechanism.



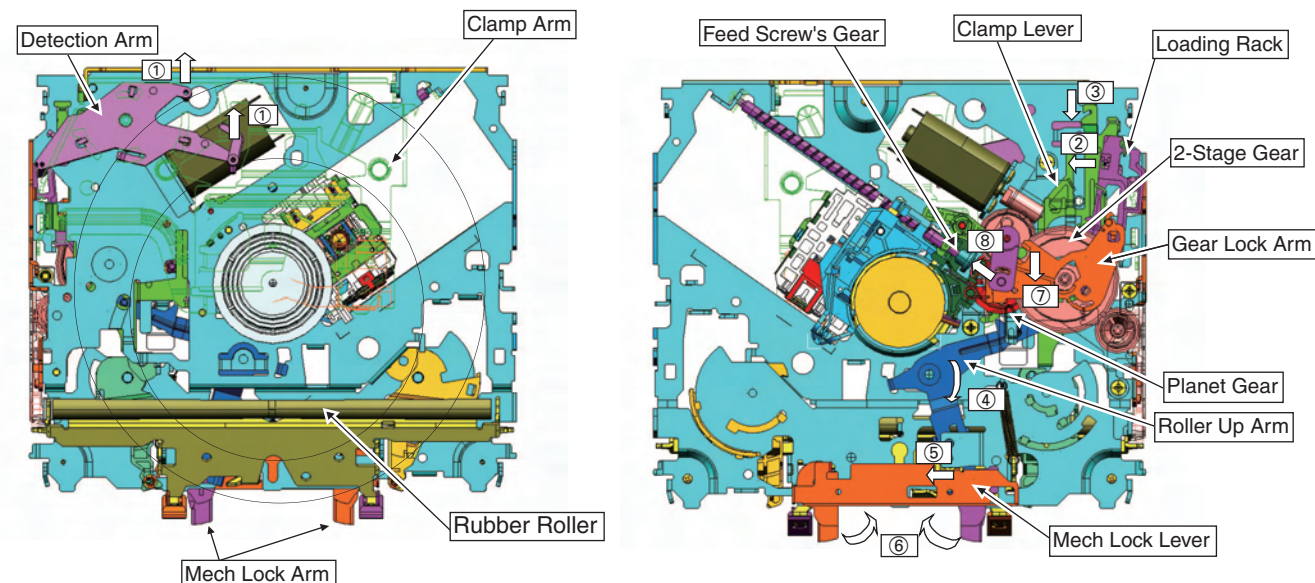
● Clamp actions mechanism

1. With an 8 or 12 cm-disc centered on the spindle, the Detection Arm is moved.
 2. The movement of the Detection Arm engages the Loading Rack with the 2-Stage Gear.
 3. The Clamp Lever slides and lowers the Clamp Arm (the disc is clamped).
- At the same time, the Roller Up Arm is rotated, and the Rubber Roller is separated from the disc.

Also the arm slides the Mechanical Lock Lever, turns the Mechanical Lock Arm, and releases the mechanical lock, completing the clamp operation.

4. When the clamp action is completed, the Clamp Lever rotates the Gear Lock Arm.

When the arm is rotated, the Planet Gear is separated from the 2-Stage Gear and engaged with the gear of the pickup feed screw, and the carriage operation will start



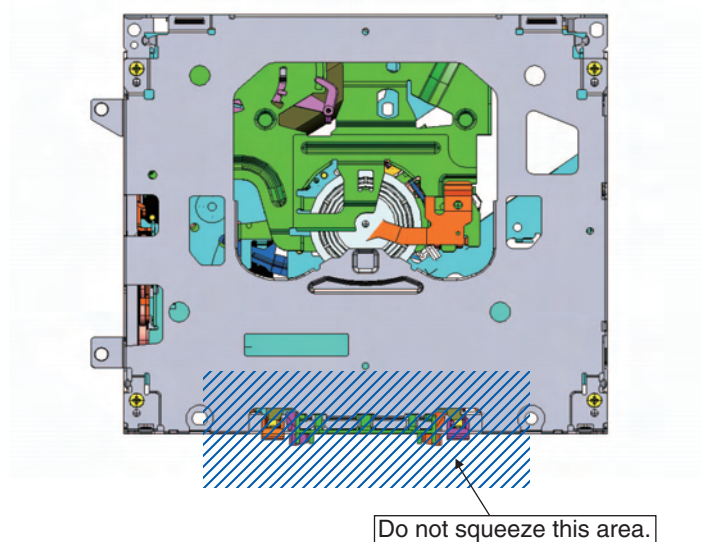
● Eject actions

1. When the Load Carriage Motor is rotated backward, and the pickup is fed to the inner periphery passing the home SW ON point, the eject action will start in the reverse order of the procedure mentioned earlier.
2. For a 12 cm-disc, Eject is completed when SW3 is switched OFF, ON, and OFF again.
3. For an 8 cm-disc, Eject is completed when SW2 is switched OFF, ON, and OFF again.

3. DISASSEMBLY

● How to hold the Mechanism Unit

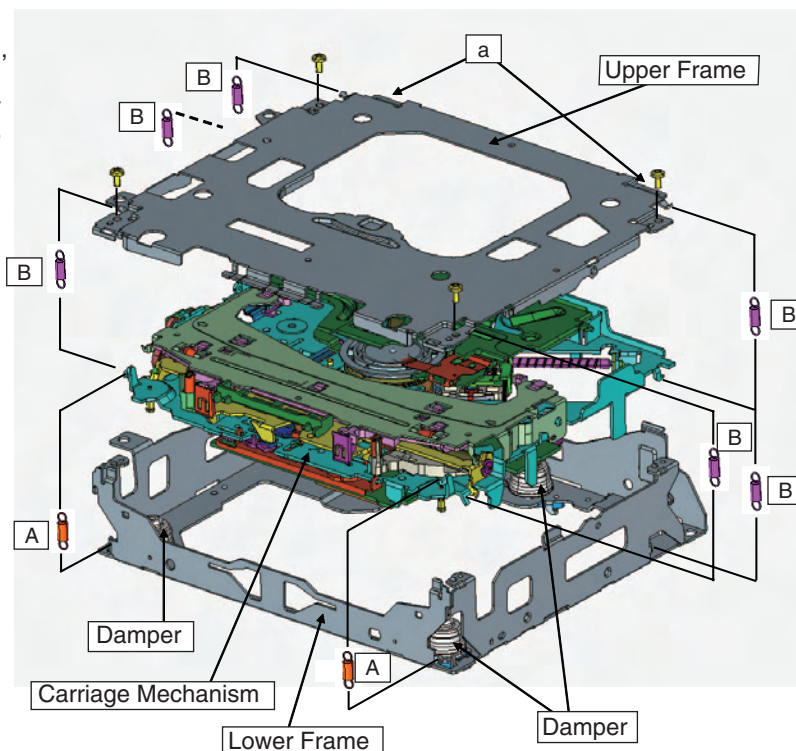
1. Hold the Upper and Lower Frames.
2. Do not hold the front portion of the Upper Frame, because it is not very solid.



● Removing the Upper and Lower Frames

1. With a disc inserted and clamped in the mechanism, remove the two Springs (A), the six Springs (B), and the four Screws.
2. Turn the Upper Frame using the part "a" as a pivot, and remove the Upper Frame.
3. While lifting the Carriage Mechanism, remove it from the three Dampers.

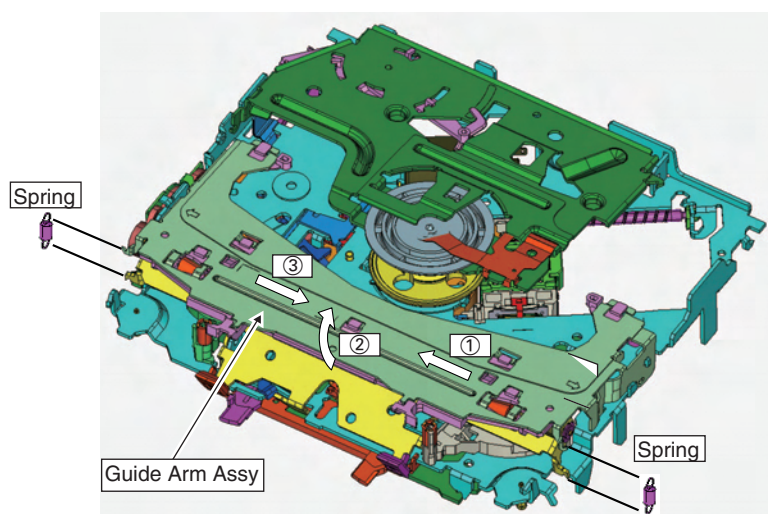
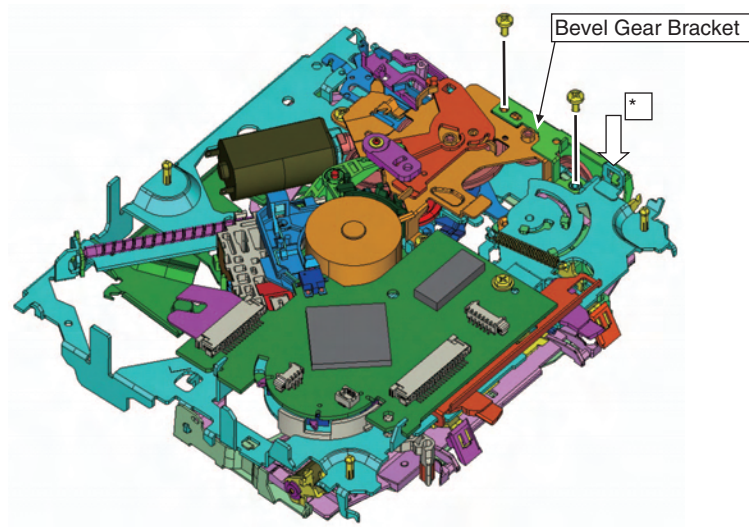
Caution: When assembling, be sure to apply some alcohol to the Dampers and assemble the mechanism in a clamped state.



● Removing the Guide Arm Assy

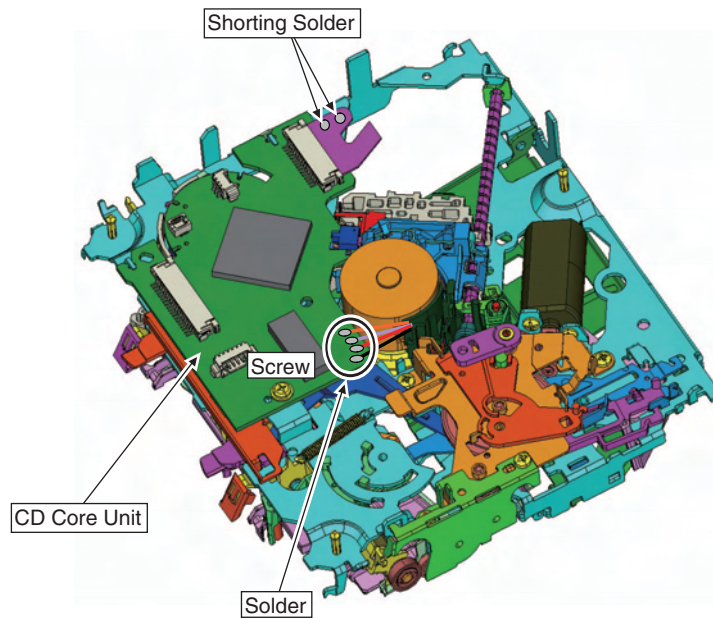
1. Remove the Upper and Lower Frames and set the mechanism to the eject mode.
2. Remove the two Screws and Bevel Gear Bracket. (Note that the gears will come off.)
3. Remove the two Springs from the left and right sides.
4. Slide the Guide Arm Assy to the left, and turn it upward.
5. When it is turned about 45 degrees, slide it to the right and remove.

Caution: When assembling, assemble with the Bevel Gear Bracket moved to the direction of the arrow (*).



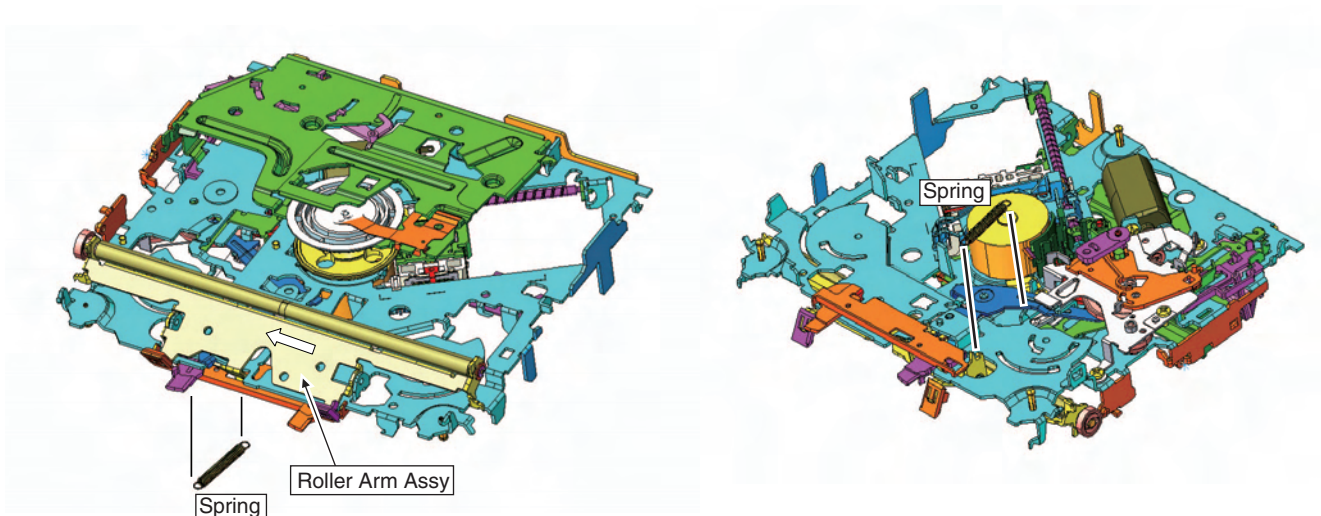
● How to remove the CD Core Unit

1. Apply Shorting Solder to the flexible cable of the Pickup, and disconnect it from the connector.
 2. Unsolder the four leads, and loosen the Screw.
 3. Remove the CD Core Unit.
- Caution: When assembling the CD Core Unit, assemble it with the SW in a clamped state so as not to damage it.



● How to remove the Roller Arm Assy

1. Remove the Guide Arm Assy.
2. Remove the CD Core Unit. (If the Spring can be removed, the unit need not be removed, depending on the type of CD Core Unit.)
3. Remove the Spring.
4. Slide the Roller Arm Assy to the left.

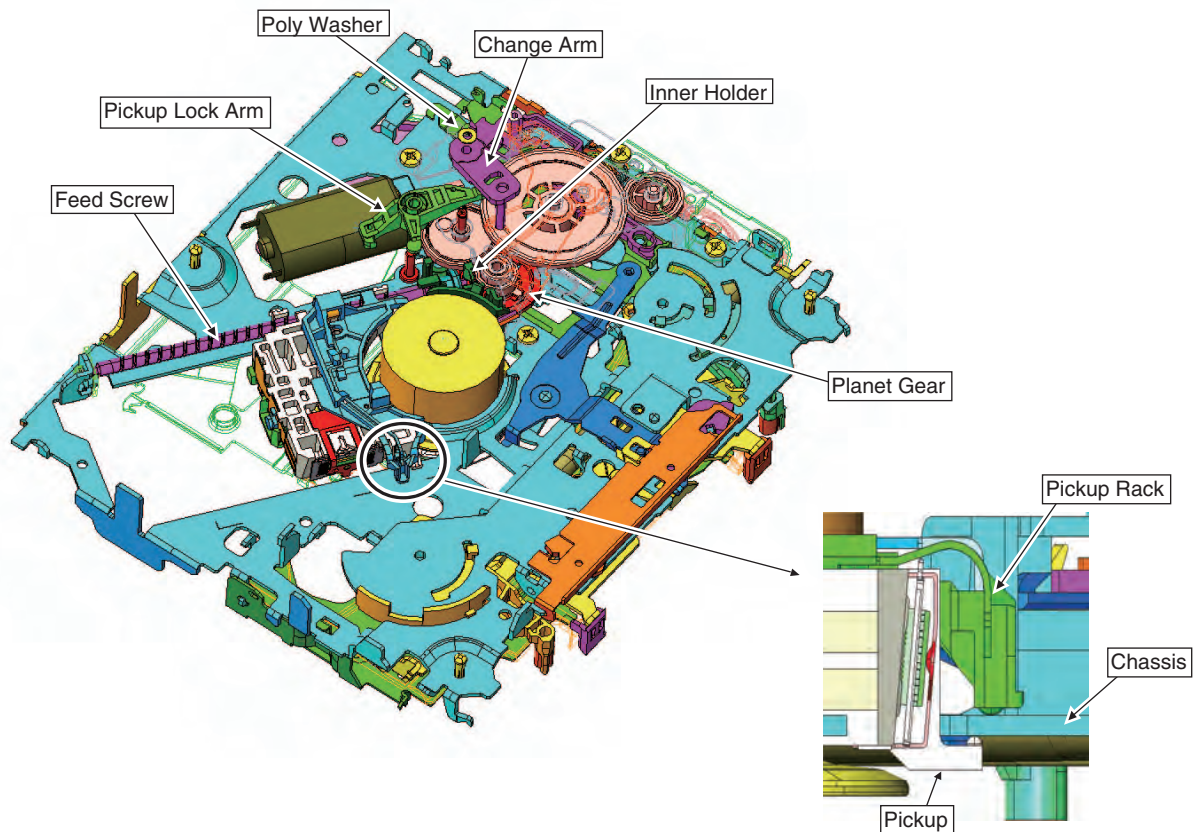


● How to remove the Pickup Unit

1. Make the system in the carriage mechanism mode, and have it clamped.
2. Remove the CD Core Unit and remove the leads from the Inner Holder.
3. Remove the Poly Washer, Change Arm, and Pickup Lock Arm.
4. While releasing from the hook of the Inner Holder, lift the end of the Feed Screw.

Caution: When assembling, move the Planet Gear to the load/eject position before setting the Feed Screw in the Inner Holder.

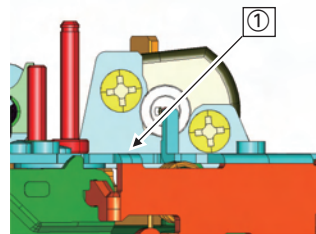
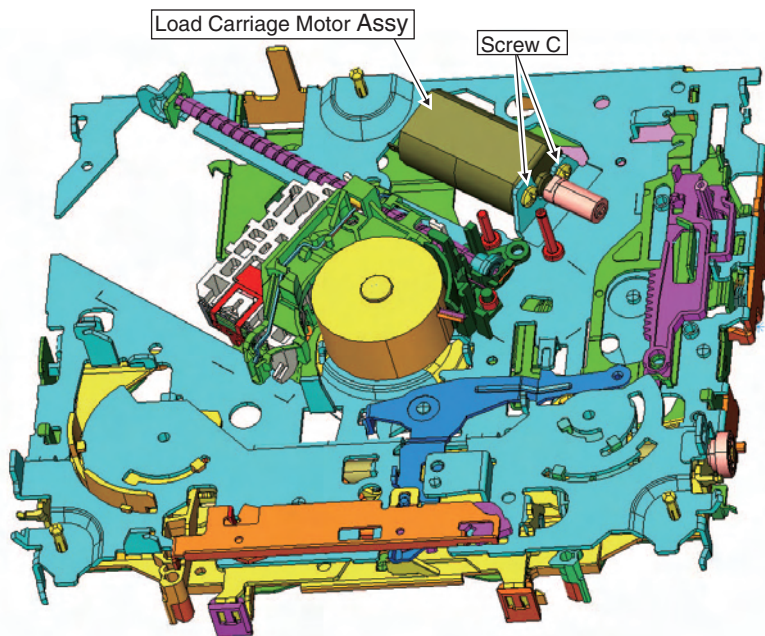
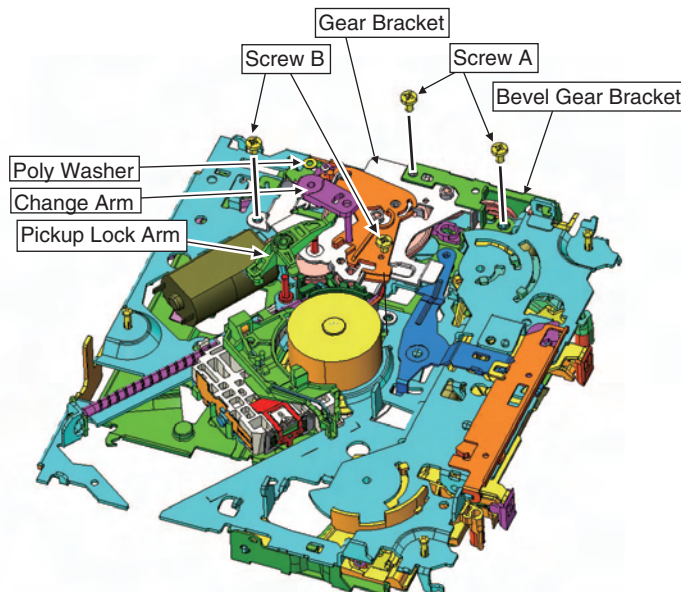
Assemble the sub unit side of the Pickup, taking the plate (Chassis) in-between. When treating the leads of the Load Carriage Motor Assy, do not make them loose over the Feed Screw.



● How to remove the Load Carriage Motor Assy

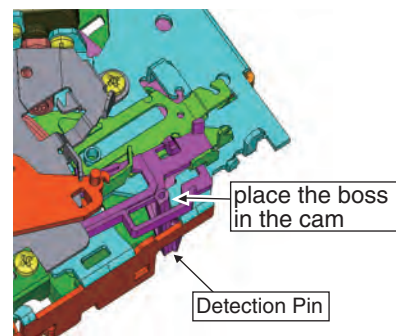
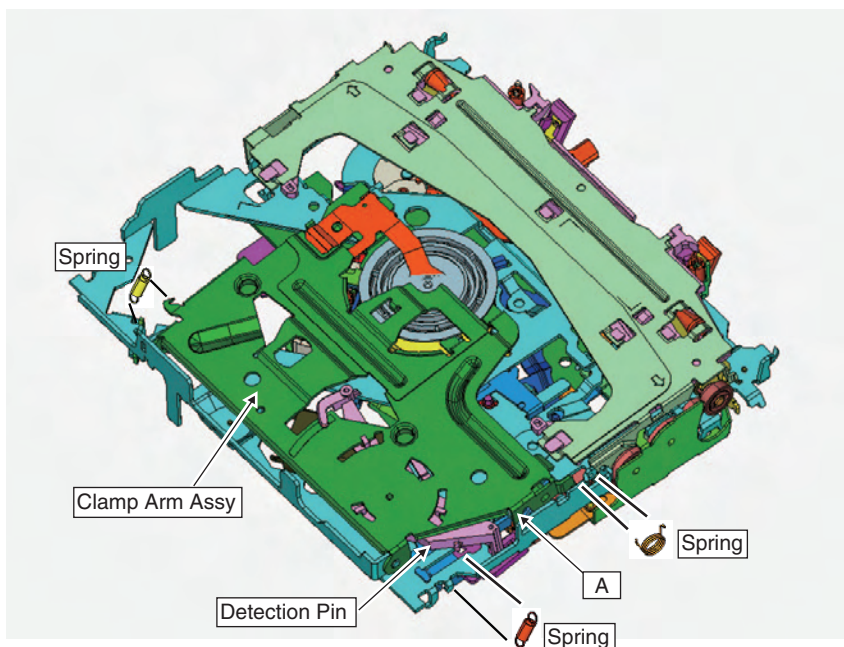
1. Make the system in the carriage mechanism mode, and have it clamped.
2. Release the leads (orange and purple) of Load Carriage Motor Assy from the CD Core Unit and remove the holder.
3. Remove the Poly Washer, Change Arm, and Pickup Lock Arm.
4. Remove the two Screws (A) and the Bevel Gear Bracket (Note that the gears will come off).
5. Remove the two Screws (B) and the Gear Bracket (remove the CD Core Unit, if necessary), and remove all the gears.
6. Remove the two Screws (C) and the Load Carriage Motor Assy.

Caution: When assembling the Load Carriage Motor Assy, move it to the direction shown in the illustration (①).
When treating the leads of the Load Carriage Motor Assy, do not make them loose over the Feed Screw.



● How to remove the Clamp Arm Assy

1. Make the system in the carriage mechanism mode, and set the mechanism to the eject mode.
 2. Remove the three Springs.
 3. While pressing the position A, turn the Clamp Arm Assy upward, slide it to the left, and remove.
- Caution: When assembling, place the boss of the Detection Pin in the cam unit of the Loading Rack.



● How to remove the Spindle Motor Assy

1. Make the system in the carriage mechanism mode, and have it clamped.
2. Remove the CD Core Unit and remove the leads from the Inner Holder.
3. Set the mechanism to the eject mode and remove the Clamp Arm Assy.
4. Set the mechanism to the clamped and move the Pickup to circumference.
5. Remove the two Screws, and remove the Spindle Motor Assy.

